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Telephone : WHitehall 9233 (20 lines) *Telegrams : "Trazette Parl London"*

BRANCH OFFICES

GLASGOW: 139, Bothwell Street, C.2 . . . *Central 4646*
NEWCASTLE-ON-TYNE: 21 Mosley Street . . *Newcastle-on-Tyne 22239*
MANCHESTER: Century Insurance Building, St. Peter's Square *Central 7667-8-9*
BIRMINGHAM: 90, Hagley Road, Edgbaston . . *Edgbaston 2466*
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Great Expectations

"IF seven maids with seven mops swept it for half a year, do you suppose," the Walrus said, "that they could get it clear ?" "I doubt it," said the Carpenter, and shed a bitter tear. We doubt it, too, if the seven maids are taken to represent the Guillebaud Committee, the Select Committee, the Stedeford Committee, and now—oh, joy of joys—the Marples Committee. The last, apparently, is not a one-man band, which probably explains its uncharacteristically quiet existence since it was formed "suddenly, last summer." After all these committees, where are British Railways ? "In a difficult financial state," says Mr. Marples in one of the most powerful understatements not only to come from a Minister of Transport, but of all time. Under sentence of receiving recommendations to cover "finance, statutory restrictions, modernisation, and reorganisation . . . not a bad harvest for six months' work." Learning that it is "disheartening and disappointing to work for an undertaking that is losing vast amounts of money." Heaping Ossa on Pelion, Mr. John Hay, Joint Parliamentary Under-Secretary to the Ministry of Transport, says that the long-term view must be taken on the advisability of continuing with the London Midland electrification scheme, or whether some of the money might not be better spent on other forms of transport. To meet the situation, the Ministry will curb the expenditure of the British Transport Commission, while not affecting contracts already placed, presumably in the belief that the wartime necessity of "make do and mend" will produce more ingenious and therefore better results than will the freedom of postwar conditions. We do not subscribe to this view: although the age of miracles may not be past, it is unlikely that the re-imposition of strict control will raise the morale of either railwayman or manufacturer whose prosperity depends in considerable part on the receptivity of the home market. Meanwhile, some of the seven maids are still sweeping away with their mops, and the House of Commons (and the country) remains uninformed on the results of their diligence. These will probably go with the rest of the dust under the mat and join the store of unsolved mysteries destined to exercise the minds of historians as yet unborn. Meanwhile, a White Paper, containing the Government's proposals, after consideration of the Stedeford Group report, has been promised. Will a committee be formed to compile *that* ?

Government Plans for Transport

THE only reference to nationalised transport in the Queen's Speech at the opening of Parliament on Tuesday was the statement that the Government would submit "proposals for reforming the structure and functions of the British Transport Commission." This does not irrevocably commit the Government to produce a Bill this session re-organising the railways. Whether these plans will be definite enough to enable nationalised transport, after yet one more re-organisation, to be left thereafter to function free from interference remains to be seen. Much earlier than the usual time of publication of estimates, a White Paper, the first of a new annual series entitled "Public Investment in Great Britain," was issued on Tuesday. This indicates the reductions in expenditure on the railways. The allocation to the British Transport Commission is for 1961-62 cut by £25 million compared with that for the current year. The investment in British Railways works, plant, and rolling stock is to be £125 million in 1961, compared with the estimated £160 million this year. This is in sharp contrast to expenditure on roads which is to go up from £74 million to £86 million in England and Wales.

Extending Export Credits

WELCOME help to British exporters, more particularly of capital goods, is to be given by the Government in the form of credit on longer terms from the Export Credits Guarantee Department. Announcing this, Mr. Reginald Maudling, President of the Board of Trade, has pointed out that it is not in this country's interests to see a race in credit terms developing, but consideration must be given to the risk of loss of contracts in countries where the outlook is promising, as chronic shortage of foreign exchange leads to refusal to place orders for capital goods without longer credit. These terms are being met more and more by exporters on the Continent of Europe often supported by Government credit insurance and Government-guaranteed finance. The British Government is prepared to authorise E.C.G.D. to insure credit on longer terms than the normal maximum in particular cases where this is necessary to allow a U.K. exporter to match terms offered by a foreign competitor. This does not mean that Britain intends to take the initiative in lengthening the terms of credit. That, the Minister points out, would not help our balance of payments, and each case will have to be considered on its merits. The policy will not apply in respect of countries to which the British Government is already giving long-term financial assistance.

The Revised Directory

RAILWAY developments throughout the world have necessitated more numerous changes with the 1960-1961 edition, the 66th, of the "Directory of Railway Officials & Year Book," than occur normally from one year to the next. These include the rapid extension of electric and diesel traction, and also the construction of new railways in less-developed

countries, where expanding populations and higher standards of living exert constantly-increasing demands on transport. In countries with a long railway history, mileages are being reduced by the closure of branch and minor lines, as in Great Britain, Ireland, and the U.S.A. These may be regarded as pruning operations to meet mid-twentieth century conditions. As last year's volume was published considerably later in the year than is normal, because of a dispute in the printing industry, the present edition has been produced on an intermediate schedule, with the intention of resuming July publication in 1961. This has enabled notice to be taken of many recent political changes, particularly in Africa.

Overseas Railway Traffics

THE approximate gross earnings of the Indian railways for August, 1960, showed an increase of 10·8 per cent as compared with the approximates for August, 1959. During the month the number of wagons loaded with goods traffic increased by 5·19 per cent on the broad gauge and by 4·43 per cent on the metre gauge as compared with August, 1959. Costa Rica Railway receipts for September amounted to colones 2,158,845 compared with colones 1,969,239 in September 1959, an increase of colones 189,606. Aggregate receipts from July 1, amounted to colones 7,128,863 compared with colones 6,526,462 in the corresponding period of 1959. Salvador Railway Company receipts for August amounted to colones 134,000 compared with colones 175,000 in August 1959, a decrease of colones 41,000. Net railway earnings of the West of India Portuguese Guaranteed Railway Co. Ltd. for the 10-day period ending October 10, 1960, amounted to contos 787, an increase of contos 39 compared with the corresponding period of 1959. Aggregate earnings from the commencement of the year showed an increase of contos 2,918. The Midland Railway Company of Western Australia Limited estimated railway and road service receipts for July amounted to £A68,416 (£A71,731), a decrease of £A3,315.

The Scope of Rail and Road Transport

THE importance of the Institute of Transport as a means of promoting the study of the art and science of transport was stressed by Lord Tenby last Tuesday at the Institute Anniversary Luncheon at the Connaught Rooms, London, W.C.2. Lord Tenby, who as Major Gwilym Lloyd-George was Parliamentary Secretary to the Board of Trade in 1931 and 1939-41, and Minister of Fuel & Power in 1942-45, stated that the Institute had an important duty in helping to determine the role which each form of transport was best fitted to play. The capacity of railways and roads, he pointed out, already had begun to be a problem 50 years ago : in 1909, his father, Mr. David Lloyd-George, then Chancellor of the Exchequer, had declared that the road system of Britain was inadequate, and had instituted the Road Fund to provide for improvements to our highway system. Not until 1919, it may be noted, and largely because of pre-occupation with the transport problems of the first world war, was the first co-ordinated attempt made to solve these and other questions by foundation of the Institute of Transport at the instigation of men representing private enterprise transport undertakings.

Simpler Day Fares

IN a drive to simplify its range of bargain fares, the Southern Region, British Railways, has reduced the number of different excursion fares to and from London, most of them affecting places on the coast; and has eliminated differences between the prices for the same excursions at various times of day. As an experiment, separate day, half-day, and evening excursion tickets have been withdrawn from lines running into Sussex and Hampshire from Victoria; there is instead one type of ticket, called simply " day ticket." This is sold all day, except during the business travel period, and on every day of the week except the busiest Saturdays, and is issued for whole groups of neighbouring stations at the same fare. Thus a passenger from London visiting Brighton can return from a station such as Lewes and Shoreham. An entirely different ticket, the " cheap day," is still issued on the many routes outside London, and within the London area various special types of cheap ticket also continue. The Regional management had long felt that there were far too many different types of cheap tickets, and that some potential passengers were irritated by differences in the fare according to the time of the day. The optimum of one sort of cheap ticket only on sale everywhere is at present impossible because of the loss of revenue resulting from removal of all limitation, but the steps taken are a move in the right direction.

More Type " 3 " Diesels for British Railways

AS a further stage in British Railways, Western Region, scheme for the complete replacement of steam by diesel power in the Bristol area, the West of England, and in South Wales, the British Transport Commission has placed a repeat order with Beyer Peacock (Hymek) Limited, for 50, 1,700-h.p. BB diesel-hydraulic main-line locomotives. Bristol Siddeley Maybach quick-running diesel engines will drive through Stone Mekydro hydraulic transmission equipment which is designed to ensure equal efficiency when hauling heavy trains at low speeds or fast passenger express trains. This is a further endorsement of the Region's adherence to the hydraulic transmission. The original order for 45 locomotives placed with Beyer Peacock in June, 1959, was the first placed for British Railways in the 1,500-1,750 h.p. range (Type " 3 "). Deliveries of the 95 main-line locomotives will begin next year and will be completed in 1963. Also announced is an order placed with the English Electric Co. Ltd. for 98 sets of engines and transmissions to equip diesel shunting locomotives which are being erected in British Railways workshops at Darlington and Horwich. The total value of the orders is about £5,500,000.

Prevention of Metal Corrosion

IT is estimated that metal corrosion is costing the United Kingdom some £600,000,000 each year. A variety of anti-corrosion and metal finishing products and services have been developed in an attempt to limit or reduce this expenditure, and over 100 firms will be demonstrating ways in which it can be achieved at the Corrosion & Metal Finishing Exhibition at Olympia from November 29 to December 2. In former years the exhibition has been known simply as the Corrosion Exhibition, but to give a better idea of its scope and the purpose it serves, the name has been extended. Because of the extensive use of mild steel in bridge building, and in latter years in overhead electrification structures, much attention has been paid by British Railways to the problem of corrosion. Wide use is made of galvanising, a well-tried and relatively cheap method of metal protection, and bituminous painting; but developments in the field of decorative finishes combined with metal protection, such as protective plastic coatings cured directly on to steel sheet, will undoubtedly benefit carriage construction.

Specialised Steel Manufacture

THE recent visit of the King and Queen of Nepal to the works of Taylor Bros. & Co. Ltd., Trafford Park, Manchester, described on page 549, was arranged in accordance with the King's request to be shown specialised steel manufacture in progress. Trafford Park Steelworks was an appropriate choice for it is the largest in the British Commonwealth specialising in the manufacture of rolled-steel tyres, wheels, and forged axles for railway rolling stock ; in fact the production of forged wheels and disc centres there is so highly mechanised that an output rate of 60 an hr. is achieved. About 50 per cent of the annual total is exported ; work in progress shown to the royal visitors included wheels and wheel pairs for Burma, Canada, Eire, Finland, Ghana, New Zealand, Norway, Pakistan, Sierra Leone, South Africa, Sudan, the United States, and, in the United Kingdom, for British Railways and the London Transport Executive. With a total of only 64 route miles open on the 2-ft. 6-in. gauge lines of Nepal there are at present few prospects of railway development.

Locomotive Engineers' Visit to Barrow

MEMBERS of the Institution of Locomotive Engineers visiting Vickers Armstrongs (Engineers) Limited plant at Barrow-in-Furness last week were able to inspect and compare the manufacture of both rail and marine transport

equipment. The works, where the Sulzer engines for British Railways diesel locomotives are made, employ 8,000 workers and the shipyard 4,500. Diesel engines, including those of Sulzer design, have been produced in these works since 1912. Production of diesel engines for rail traction commenced in 1947 and of the total 600 engines ordered, over 200 are now in service on British Railways. Extensive tooling is used to ensure interchangeability of engine components and to eliminate hand fitting. The Barrow works also undertake the production of a considerable quantity of accurate gearing, and the most modern equipment and techniques are employed for all stages of gear manufacture and inspection. On the visit to the shipyard members inspected the P. & O. passenger liner *Oriana* in the fitting-out basin. The many design features of this vessel include transverse propulsion for docking, and gyro-controlled stabilisers—the last much used in British Railways packet steamers. A point of particular interest to the locomotive designers was the importance of weight reduction even for a ship of 40,000 tons. This requirement has been met by the use of over 1,000 tons of aluminium plate and sections in the superstructure of the vessel in lieu of conventional construction in steel.

Bailey Spans for Temporary Overline Bridge

THE four-track main line of the North Eastern Region, British Railways, between Durham and Newcastle is crossed on an overbridge by a road near Birtley. This bridge is a girder structure, and to enable it to be raised and for track improvements and strengthening to be effected, it is being replaced temporarily by a Bailey bridge consisting of five 60-ft. and two 20-ft. spans. The spans are carried by military-type trestle piers and though they can be handled by a 5-ton crane they are suitable for road loads of up to a 12-ton axleload. They are on hire from Thomas Storey Limited, of Stockport, which firm also supplied labour and technical advice. The temporary bridge is expected to be in use for about three months whilst the superstructure of the permanent bridge is being raised on extensions to the abutments and pier. Lifting will be by 50-ton hydraulic jacks mounted on four old locomotive frames and wheels converted for this purpose, two each on adjacent tracks.

European Summer Passenger Services

NOTABLE features of the 1961 summer passenger timetable agreed at the recent European Timetable & Through Carriage conference in Leningrad are the continuance of sleeping car and ordinary coach services between Paris Nord and stations in Italy, affording good connections in Paris with the Calais boat expresses; and the inclusion of second class berths in the through sleeping cars, which are to run daily, between the Hook of Holland and Moscow in connection with the Harwich-Hook day sailings. The growth of air travel over longer distances and the restrictions on transit through countries beyond the Iron Curtain resulted in proposals for confining the "Orient Express" and the "Simplon Orient Express" services to west of Vienna and Belgrade respectively. As recorded on page 548, the service to and from Bucharest hitherto given by the former train is to be provided by the "Arlberg Orient Express," and the S.O.E. is to continue to run to and from Athens and Istanbul. Car/sleeper trains are now an established feature of European travel, and a good many such services will be provided next summer. Extensive reductions in journey times over longer distances were limited by the extent of electrification works on railways in several countries, and the work of the conference consisted largely of improving services in particular countries.

The Term "Railway Officer"

A LETTER published this week questions the suitability, and indeed the accuracy, of applying the word officer to railway senior staff. The writer is clearly incorrect in confining the word to "commissioned members of the Forces of the Crown," as the use of the word to denote the holder of an office in a society or the Civil Service, for example, is both widespread and also recognised in standard dictionaries. The letter raises two distinct matters. The first is the generic use of the term "railway officer," and the second is the inclusion of the word "officer" in a specific title. The former has already reached the dignity of the centenarian, as it is used, for example, in "Bradshaw's Shareholder's Manual" for 1860 and onwards, whereas the word "officials" had been used previously. "Officer" as part of a specific title on railways in Britain is of much more recent origin, always excepting "Medical Officer," which has long been used by the railways in common with local government and other large organisations. It began in a very limited way about 1930 with the term "Public Relations Officer," but it did not become widespread; nor was it extended to the title of higher officers, until nationalisation in 1948. "Agent," "Manager," and "Assistant," were the long-recognised terms.

Informed Debate

FROM the Parliamentary point of view, last week's debate in the House of Commons on the British Transport Commission was outstanding in that its participants were better informed and spoke less along party political lines, and consequently were more constructive than in any recent transport debate. This was because, besides the report and accounts of the Commission for 1959, Members had before them the report of the Select Committee on Nationalised Industries, which helped them to view the problems and difficulties of the railways in their correct perspective. With a few exceptions speakers on both sides of the House accorded proper praise to the accomplishments of the Commission. The notable exception was the Minister of Transport, Mr. Ernest Marples, whose lapse in this respect was the more regrettable in view of his unfortunate Scarborough speech. Some speakers also showed that they realised the seriousness of the threat to the morale of the staff if the role the railways were expected to fulfil was not quickly determined. It was not surprising, therefore, that Members regretted the Minister's failure to inform the House of the recommendations of the Special Advisory Group under the chairmanship of Sir Ivan Stedeford, and could not understand why, in addition to this, and to the Select Committee, it was necessary to appoint yet another committee, this time called a study group, to probe still further into the Commission's future. This meant that Parliament had to await yet another White Paper before the Government's proposals were known.

To the extent to which the new group would determine future transport policy in general, and its several forms in particular, it was accepted as having a possible function; but if its purpose were to appraise railway modernisation once more, it was considered redundant. This latter, the Minister seemed to confirm, was its objective. He stated that the size and shape of a revised modernisation plan was to be considered; and the Parliamentary Secretary, Mr. John Hay, went even further when he said that there must be a searching inquiry into the major modernisation schemes. This need was certainly not reflected in the speeches of Members, who had been taken by surprise by this announcement; for, as a welcome change, general appreciation was expressed of the achievements of modernisation to date and of the results that were accruing from it. In fact, the operations of British Railways came in for an unusually small amount of criticism.

Another welcome trend was the more realistic view taken of the administrative and managerial structure, particularly in regard to decentralisation and autonomy for the Regions of British Railways. The pressure from Conservative back-benchers for complete financial autonomy, which had appeared to receive support from the Prime Minister when he announced, last March, the appointment of the Stedeford Committee, and its terms of reference, seemed to have eased; for this the Select Committee is also no doubt responsible, and not least its Chairman, Sir Toby Low. His speech made clear the extent to which decentralisation had already been carried in the Regions and beyond, and the limits to which it could extend without impairing the efficiency of the Commission as a whole. While he favoured detailed costing, which he considered was now largely operative, he was emphatic in rejecting the establishment of a series of autonomous regional boards; in fact, he admitted that all the evidence convinced those who had tendencies in that direction to oppose them. That the Government may still be thinking on these lines, was indicated by the Parliamentary Secretary who, in winding up the debate, went out of his way to suggest that

accountancy had undergone a complete change, as a result of the simplification made possible by electronics and computers which, he contended, might well resolve the difficulty of regional accounting.

By and large, the Commission came well out of the debate, because all, from the Minister down, accepted that a railway system was essential to the country's economy, and it was not over-blamed for its current deficits. Mr. Marples did not go as far as Sir Toby Low who, claiming to speak for the whole of the Select Committee, expressed the view that a large-scale railway system could be profitable, provided that there were further pruning of uneconomic services or their subsidisation if retained in the national interest. But Sir Toby Low did not share the view of most speakers that a capital reconstruction, relieving the Commission of much of its interest charges, was essential if it were to be able to pay its way, though the figures of deficits and interest showed this to be inevitable.

Last week's debate was the first of a series on transport which will be required before the Commission finally knows where it stands. If the precedent set by this debate, held at the close of last session, is to be followed in the current session, which opened this week, then the Commission can look ahead with somewhat greater confidence than has been possible by the political background against which its affairs hitherto have been ordered and discussed.

Glasgow Suburban Electrification

INAUGURATION by Sir Brian Robertson, Chairman, British Transport Commission, of the Glasgow-Airdrie-Helensburgh electric services of British Railways, Scottish Region, tomorrow will complete the first stage of the Region's electrification plans for the Glasgow suburban area. The regular service begins on November 7. Conversion is on the 50-cycle a.c. system on the lines of the former North British Railway, later a component of the London & North Eastern Railway, along the north side of the River Clyde between Airdrie and Helensburgh *via* Singer and Yoker, including the Milngavie and Balloch branches, and lines to Springburn and Bridgeton Central, a total of 52 route-miles, or 114 track-miles. The high percentage of curved track and the length of line in tunnel have presented many problems. This has made the work largely different from anything else encountered on British Railways. The high speeds under electrification have involved extensive track improvements particularly on curved sections, and the necessity to supply long stretches of line in built up areas and through tunnels at 6.25 kV. emphasises the difficulty which British Railways engineers have to face in providing adequate clearance for a 25-kV overhead system.

Not only will this be the first scheme in Britain to operate on the dual voltage system, but it will become the first a.c. high-voltage electric scheme to work underground in Britain. The voltage change-over switch is incorporated in the main transformer of the multiple-unit stock. This alters the supply tapping on the auto transformer to correspond with the main incoming voltage at either 25 kV. or 6.25 kV. The change-over switch is automatically controlled by an automatic power control system (A.P.C.) which consists essentially of a track magnet, a receiver on the bogie of the stock and a line voltage transformer which feeds a number of voltage selecting relays. The auto transformer feeds a step-down transformer which in turn supplies the main rectifiers.

Two types of catenary construction have been used for the scheme, each catering for a particular speed restriction. On lines where the limit is 60 m.p.h. or less, simple catenary is used. Where the speed restriction is over 60 m.p.h. compound catenary construction consisting of catenary, auxiliary, and contact wire is used. Structures for the overhead equipment fall into several categories dependent on the loading and track conditions.

A feature which was considered to be of primary importance in the design of the three-car train sets was the attraction of off-peak tourist traffic. To determine the most attractive specification to meet this requirement the Pressed Steel Co. Ltd. produced a full-size mock-up of the complete train in which all possible alternatives of seating layouts, cab styling variants, colours and materials for interior decor and upholstery, and choice of fittings were displayed. Loading and unloading of the peak-period traffic is greatly facilitated by the air-operated sliding doors, electrically controlled by the guard. In common with the traction motors fitted in the Manchester-Crewe multiple-unit stock, special provision is made to provide ripple-free current after conversion for the d.c. motors to improve commutation. The bright blue livery, with black-and-yellow lining, is a revival of that used for locomotives of the former Caledonian Railway.

When the last train leaves Glasgow Queen Street for Helensburgh this evening it will bring to an end three-quarters of a century of steam traction on the line. Apart from the obvious advantages of a cleaner and more efficient service, it is confidently expected that electrification will stimulate suburban development, as has been demonstrated with the Kent Coast electrified services of the Southern Region, bringing with it an increase in revenue.

Signalling Developments with A.C. Traction

THE advent of 25-kV a.c. electrification has had some far-reaching effects on signalling and telecommunications systems, and the solutions to the problems which have been posed have involved some interesting and important developments. Broadly speaking, the problems lie within two categories, namely, those concerned with signalling track circuits, and those associated with telecommunication systems.

Considering first the track circuit question, the introduction of the 50-cycle a.c. traction system using the running rails as one path for the traction current has necessitated the abandonment of the hitherto satisfactory 50-cycle track circuit system in favour of one unaffected by the traction current. One of the methods adopted was the d.c. track circuit involving a track relay rendered immune from the effects of the a.c. traction current. This has been done by producing a track relay fitted with copper slugs on the cores between the coils and the armature air gap, and magnetic shunts which link the cores between the coils and the copper slugs. Additional protection is given by the insertion of high impedance chokes in series with the relay. A further reactance is connected at the feed end of a track circuit when supplied by a rectifier. A disadvantage of the d.c. system is that, being essentially of the single-rail type, it is limited in length to 500 yd., and where track circuits of greater length are required an a.c. system has been developed. This consists of a 75-cycle supply from a frequency generator fed at 50 cycles, with a frequency discriminator at the relay end of the circuit. The output from the discriminator is taken through a rectifier to a normal d.c. relay. Track circuits up to 1,500 yd. in length are possible with this method, but the cost of the installation is considerable. This latter factor, together with the close spacing of signals necessary for high traffic density and consequent short track circuits, favours the adoption of the d.c. system. Further developments, including the use of pulsed type track circuits with frequencies up to 800 cycles and with high-voltage d.c. have been tried out, but so far have not shown any appreciable advantage over the d.c. method referred to above. The overnight conversion of existing 1,500-V. d.c. electrified routes to 50 cycles a.c. in the Eastern Region of British Railways called for special measures to deal with the track circuits. Because of the impracticability of changing the track circuit system in the time available for the change-over of the traction system, it was necessary to instal equipment which would operate equally well under the d.c. or the a.c. traction conditions. An 83⅓-cycle supply is provided for the track circuits and protection of the relay from traction current is effected by frequency selection in the track winding circuit of the relay and supplying the local winding from a second phase independent of that feeding the rails. Specially developed rotary converters provide the 83⅓-cycle supply.

A considerable amount of study and development has been undertaken to overcome the difficulties caused by interference of the 50-cycle traction system with railway signalling circuits and telecommunication circuits close to the electrified track. The acceptable limits of interference recommended by the Comité Consultatif International Télégraphique et Téléphonique have been applied to all lineside signalling and telecommunication circuits, except that, in the case of the former, the induced voltage limit of 60V. was raised to 110V. All lineside signalling and telecommunication circuits are cabled to reduce the effects of interference from the catenary system which would have been intolerable if the normal open-

wire system had been retained. Because of the shortness of length of signalling circuits normally exposed to induction effects, it was not considered necessary to provide screening for these cables, and where unusually long circuits occur their length of exposure is limited by the use of repeater relays. The measures taken to counteract interference with the railway telecommunication circuits include immunisation of the cables only and a combination of this process with a reduction of interference at its source.

Local circumstances have accounted for variations in the methods used for screening the cables. Some cables have four steel tapes, others have two, while in a third example the aluminium sheath serves as the screening. In all cases the screening is earthed at intervals of 1,000 yd. Reduction of interference at its source has been found to be essential in the task of suppressing induction effects on the Post Office telecommunications system, and is similarly effective in the case of railway telecommunication circuits. This requirement has led to the development of " booster transformers," which, in some schemes, are connected between the contact wire and the rails, and, in others, between the contact wire and special return conductors. In most instances, the system using return conductors has been adopted. The booster transformers, which are located at two-mile intervals, are mounted on special lineside structures, while the return conductors are carried by the masts or structures supporting the catenary system. The cost and complexity of the installation are considerable but it has been found to be the most effective method so far of dealing with this problem.

Steps have been taken to render immune from the induction effects of the traction system the various lineside items of signalling equipment. In some relays this is effected by the addition of copper slugs in the same way as the track circuit relays previously described, usually augmented by the insertion of a series choke. Protection against the operation of colour-light signals by induced voltages is obtained by locating the signal control relays close to the signal, thereby restricting the length of the local leads to the signal.

South Australian Railways

THE annual report of the South Australian Railways for the year ended June 30, 1959, a copy of which has been sent to us by Mr. J. A. Fargher, the Railways' Commissioner, records a net working surplus of £436,644, compared with a net deficit of £375,914 in the previous year. Total earnings decreased £301,535 to £12,920,890, but there was a larger fall of £928,886 in ordinary working expenses to £14,102,538. The contribution by the State Government towards greater costs not covered by higher freight and passenger charges was increased from £3,500,000 to £3,850,000. After taking this into account, the financial results for the year showed an improvement over 1957-58 of £462,558, notwithstanding an overall reduction in the volume of business handled. Total expenditure was £17,134,246, including £1,793,764 interest charges. The following are the principal results for the two years 1957-58 and 1958-59 :

	1957-58	1958-59
	(Thousands)	
Total train miles	7,080	6,890
Passenger journeys	17,564	16,805
Goods tonnage (freight paying)	4,166	4,227
	(£ Thousands)	
Coaching receipts	1,963	1,973
Goods receipts	9,541	9,364
Total receipts	13,222	12,921
Total working expenses	15,430	14,532
Route mileage	2,533	2,533

Earnings from freight and livestock fell by £248,038 or 2·4 per cent to £10,098,208 because of loss of traffic to road competition and the granting of special rates to meet this competition. Had the railways continued to share in the total merchandise traffic available to the same extent as up to 1955, Mr. Fargher says, it would have been reasonable to suppose that net ton miles would have increased to some 302m. in 1958-59. But merchandise actually carried of 236m. net ton miles represented a loss from potential of 22 per cent, equivalent to a fall in earnings of £1,200,000. There were declines both in the number of suburban and country passengers, although income from suburban journeys was marginally higher.

The rate of loss of traffic " has now reached very serious proportions and there is every indication that it will continue to increase," Mr. Fargher states. The traffic has been lost to ancillary road carriers and also to inter-State road hauliers.

There was a further substantial reduction in the use of coal and oil for steam locomotives, following the introduction of more diesel locomotives and railcars. The fleet of broad gauge main-line diesel-electric locomotives was increased to 29 during the year by the receipt of six additional 930-class 1,750-h.p. locomotives from A. E. Goodwin Limited, of New South Wales. The remaining unit to complete the contract for 20 was received shortly after the close of the financial year. A contract has been placed with A. E. Goodwin for 10 830 class 900-h.p. diesel-electric locomotives with an axle load of under 12 tons for use on the lighter lines of the broad-gauge system.

Commenting on the increasing requests for level crossing protection in view of mounting road traffic, the Railways Commissioner submits that more enlightened policy on level crossing protection is called for in South Australia. In other States such funds come from sources other than the railways. The requests, he points out, come from bodies concerned with road safety but who bear no share in the costs of protection, an " inherently unsound state of affairs."

The Railway Position in September

(By a correspondent)

THE Select Committee on Nationalised Industries reported to the House of Commons that " on the evidence they have received, there is no doubt that a large-scale British railway system can be profitable." Unfortunately there is nothing in the 1960 statistics so far to support this conclusion. In four weeks to September 11, the railways originated 18,176,000 tons of freight train traffic, an increase of 1,849,000 tons, or 11 per cent on 1959. In handling the increase the railways worked 131 million more ton miles, a rise of 10·8 per cent. Freight train receipts were £1,453,000, or 8·2 per cent, higher. Not much margin for profit there! Over 36 weeks, the margin narrowed, tonnage being up nearly 7 per cent, ton mileage 5·3 per cent higher and receipts rising by only 2·1 per cent.

Compared with the ninth period of 1953, the railways lost 658,000 tons of merchandise, 170 tons of minerals, and 2,436,000 tons of coal and coke, a total of 3,264,000 tons, or 15 per cent. They worked 316 million, or 19 per cent fewer ton miles. Yet for 12 weeks to September 11, steam freight train speed at 9·6 miles an hour was 3·7 per cent slower than in 1959, while diesel speed rose to 11·2 m.p.h. because of the Scottish Region recording a speed of 13·3 m.p.h. and the North Eastern covering its small mileage of 260,000 at 22 m.p.h. The London Midland Region advertised that it ran 600 express freight trains every weeknight at passenger train speeds; evidently they hamper the progress of ordinary freight trains, for its average speed dropped to 9·24 m.p.h. for steam trains and to 7·47 m.p.h. for diesel trains, the lowest returns from any Region.

Slow movement on the London Midland may be due to the overloading of some trains. Its average train load of 162 tons was 13·5 tons heavier than a year ago and 18 tons more than the all-line average of 144. In contrast the Eastern had a load of 156 tons, the Western 145 tons, and the North Eastern 138. The excessive number of wagons used for loading merchandise on the London Midland Region may also prejudice mobility. With much the largest tonnage of high-class traffic, a vigorous effort would lift the avarage wagon load from 3·73 tons to at least the general average of 4 tons.

During the twelve weeks to September 11, the number of wagon loadings increased by 161,000, or 3 per cent, to 5,479,000. The average wagon load at starting point also increased by 3 per cent to 9·8 tons. Total wagon miles rose by 7,272,000, or 1 per cent, but the number worked in a train engine hour dropped to 217, though the Eastern Region led the way with 231. The Eastern also had much the best output of freight train operation, 1,266 ton miles per train engine hour, against the all-line average of 1,146, which was depressed by a Western Region return of 1,055.

Optimistic estimates of expanding passenger business, which were current recently, are not likely to be realised. In seven months to July the railways originated 579,773,000 passenger journeys, a decrease from 1959 of 16,681,000, or 2·8 per cent;

first-class travellers numbered 12,297,000, a loss of 669,000—just over 5 per cent. Total takings were £6,861,000 more, a rise of 8·4 per cent. First-class passengers paid £884,000 of that increase; their average payment was 26·5d. higher, while second-class passengers were charged 3·36d. more for each journey.

In July alone there was a fall in bookings of 8,571,000, or 9·1 per cent, shared by all Regions. In spite of their electrified lines the Southern had the largest decrease of 2,865,000, over 8 per cent, and the Eastern lost 1,756,000 passengers, 11·4 per cent. Neither did diesel multiple unit trains save the North Eastern from a decrease of 556,000 people, or 9 per cent. The Western Region seems to have fallen out of favour with the public; in seven months it originated 4,404,000 fewer journeys, a decrease of 7 per cent; in July alone it lost 1,239,000 of these journeys, a drop of 12 per cent. There is no certainty about the future of railway passenger traffic and returns for the rest of the year will be awaited with some anxiety.

LETTERS TO THE EDITOR

(*The Editor is not responsible for the opinions of correspondents*)

Pullman Services

October 24

SIR,—Mr. F. E. Lamond, writing in your October 14 issue, has jumped too readily to the conclusion that British Railways is overlooking the value of standardisation in introducing Pullman cars in the Eastern and North Eastern Regions which are dissimilar from the new diesel Pullmans in the Western and Midland Regions.

In the first place, the multiple-unit diesels in the Western and Midland Regions were designed for special experimental purposes and will remain on trial for some time. Meanwhile, other important Pullman services have to be maintained. The new vehicles for the Eastern and North Eastern Regions, for example, were most urgently required to replace cars of timber construction which were life-expired.

Contrary to Mr. Lamond's supposition that the new Pullman cars have called for "complete re-tooling," we have taken the steel shells of British Railways standard locomotive-hauled stock for these vehicles and equipped them with Pullman furnishings. This, in fact, has resulted in appreciable economy, as the jigs were already available. That is, incidentally, the most economic form of all-steel construction available in this country.

Mr. Lamond says that there are various differences between the Eastern Region Pullmans and the new *de-luxe* multiple units. This is correct, of course, as explained above, but not on all the points mentioned by him. The width of the cars, for example, is 9 ft. at the waist rail, which is the same as the multiple-unit version. The windows are 5 ft. in length on both kinds of stock, and are doubled-glazed in both cases. It is true that the new cars are 5 tons heavier than the multiple units but, as I say, the construction is quite different. In any case, most of the 5 tons excess weight is attributable to the Commonwealth bogie compared with the Metro-Schlieren bogie with which the multiple diesel trains are fitted.

I hope this will enable Mr. Lamond to appreciate that, far from engaging in mild flights of non-standardisation, as he suggests, we have done exactly the opposite with considerable financial saving.

Yours faithfully,

J. H. BREBNER
Public Relations Adviser

British Transport Commission,
222, Marylebone Road,
London, N.W.1

Locknuts

October 25

SIR,—In his letter published in your October 7 issue, Mr. G. R. Parkes raises a very important question. Reference is made to the statement in the report on the accident to a "Britannia" class engine that ". . . various types of locking nuts have been tried but none has been found satisfactory."

If this is so it does appear, as he states, that either the manufacturers' claims regarding locknuts are not substantiated or the proper type of locknut has not been used. I am unable to comment as to whether or not the proper type of locknut was used or indeed whether those which were tested were used correctly.

Reading of the report, however, shows that some very strong forces were working on these bolts and nuts; in fact it appears as though the nut caused bending of the split pin and before falling off the bolt was screwed over this pin, cutting a thread into it.

Most locknuts or "stiff nuts," as they should be called, rely on a friction element, which by one means or another grips the thread, and a torsional effort is needed to cause the nut to rotate on the bolt. When a bolt is correctly tightened, the tension in the bolt must first be lost before the joint becomes loose and the effort required to unclamp a fully tightened bolted joint is very much greater than that required to move an unclamped stiff nut along the bolt thread.

It is in the few severe applications where very substantial forces are applied to the bolt and nut that stiff nuts cannot always be considered and a true "lock" nut is needed. These work on a different principle and in at least one case the more the vibration the tighter does the nut grip the bolt.

My own company manufactures at least two types of "stiff nut" and one "lock nut" all of which are being used successfully in applications of varying severity and we claim that by careful examination of an application a suitable nut can almost always be selected which will give complete satisfaction.

No stiff nut or locknut is the answer to poor component design and whether a "stiff" or "lock" nut is used, or whether standard nuts are used with split pins, cotter pins, and so on, if the fastening is not given proper consideration in the design stage, failure can occur.

For general use we are confident that the nuts we supply, as indeed most other types available, are capable of doing that for which they are designed and they can be used with confidence but in these severe cases we are always prepared to offer our advice so that the required results can be achieved using the most suitable type of fastening for that application.

Yours faithfully,

K. A. SMART
Assistant Manager, Sales Promotion Department

Guest Keen & Nettlefolds (Midlands) Limited,
Box No. 24, Heath Street,
Birmingham, 18

The Term "Railway Officer"

October 17

SIR,—I have often wondered why the term "officer" is so extensively used: it has only come to the fore in comparatively recent years and seems to me inapplicable and unsuitable.

We have Operating Officer, Commercial Officer, Staff and Establishment Officer, Fares and Charges Officer, Public Relations Officer, etc.

None of these persons who occupy such positions in the railway service presumably holds commissions or wears uniform. I should like to see the term abolished. It will be remembered the title of Chief Regional Officer reverted to that of General Manager.

The term "officer" should surely be confined to commissioned members of the Forces of the Crown. What is wrong with the traditional description of Superintendent or Manager? Perhaps some of your readers would like to express their views on the subject.

Yours faithfully,

H. F. DALTON

"Pinn-Meadow," Eastcote Road,
Eastcote, Ruislip, Middlesex

THE SCRAP HEAP

Not So Right Away, Guard

At my local station porters wave trains out with wet lettuces, Balaclava helmets, or bowls of steaming porridge. When I holidayed in Rome last year, the Italian porter dispatched the train with a salami sausage.—*From a letter to the "Evening Standard."*

One Horse Power

New Zealand Railways accountants were understandably astonished recently when they received a claim, dated January 22, 1960, "to hire of horse, while relieving stationmaster: hire charge —20 miles=one pound." The claim was duly verified and the voucher passed for payment.—*From the "New Zealand Railways Staff Bulletin."*

Hump Impact

To-date the 1,850-h.p. Co-Co diesel-electric locomotives [supplied by Vulcan Limited to the Sudan Railways], have been involved in eight collisions with camels which have strayed on to the line. The cow-catcher can effectively cope with normal animals, but the camel, being differently built, is causing damage to the lights and the exterior of the cab-end. Experiments are being made with a new fitment (probably to be entitled a camel-catcher) which can be attached when required.—*From the "Vulcan Magazine."*

"Which has the long-term advantage, Senators? A new aqueduct at 160 million denarii which MAY carry more amphorae or better viae for the Divine Ernestus and his chariots, which certainly WILL?"

Last Midland 0-4-4 Tank

The last 0-4-4 passenger tank engine of the former Midland Railway has been withdrawn from service in the London Midland Region, British Railways. This locomotive, No. 58086, was one of 20 constructed in 1900 by Dübs & Company to the design of S. W. Johnson, Locomotive Superintendent of the Midland Railway. It went into traffic in August, 1900, as No. 2623, becoming 1423 in 1907, which number it retained on being taken into London Midland & Scottish Railway stock. On nationalisation in 1948 it was given its present number. When built, these locomotives had round-top fireboxes which were later replaced by Belpaire type boxes, and Salter-type safety valves on their domes. They became the standard type of passenger tank used on the Midland, and at grouping in 1923 there were 226 in stock; they were used all over the Midland Railway on passenger services, and some were fitted with condensers for working over the Metropolitan Railway "widened lines" to and from Moorgate. Coupled wheels are 5 ft. 4 in. dia., boiler pressure 150 lb. per sq. in., tractive effort 15,491 lb. at 85 per cent boiler pressure, and total weight in working order 52 tons 18 cwt. (originally 53 tons 4 cwt.).

Last ex-Midland Railway 0-4-4T, now withdrawn from service

Enthusiastic Amateur

A young man of Sydney, aged 18 loved trains. He got a job at Clyde rail, way workshops as a shop boy. But thawasn't enough. He wanted to be *on* trains. So he stole: a railway excess fare book, a railway vest and station assistant's badge, a cap and another station assistant's badge, a railway lamp, a railway lumber jacket, and for six consecutive days he travelled between Newcastle and Sydney on the express, posing as a learner corridor attendant. In Newcastle court he was fined £16 and ordered to pay £10 3s. 3d., the cost of his trips on the express.—*From "The Sun" (Melbourne).*

All-Pullman Trains in the U.S.A.

There are now only three all-Pullman trains operated in the U.S.A. all the year round. These are the "Broadway Limited" and the "Pittsburger" (Pennsylvania Railroad) and the "Panama Limited" (Illinois Central Railroad). The "Broadway Limited," which made its initial run between New York and Chicago in June, 1902, is still well patronised after 58 years, though numerous passenger trains on various railways have been withdrawn from service through lack of patronage. Its eastbound time for the 908-mile run is 15½ hr., and the westbound time 16 hr.—*From "Railroad Magazine."*

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

QUEENSLAND

Tests with Concrete Sleepers

The Queensland Railways has laid down a section of concrete-sleepered track to test its behaviour under heavy suburban traffic conditions. The trial installation has been made in a half-mile length at Milton, near Brisbane, and is part of the suburban quadruplication project. Five different types including one of Swedish design are under observation, as well as a normal timber sleeper mounted on rubber pads.

VICTORIA

Overpass Reconstruction

One of the biggest standard gauge reconstruction projects, the extending of the Hume Highway overpass between Seymour and Mangalore, was started last month. The overpass is being lengthened by 45 ft. to allow the new standard-gauge line under construction to pass underneath. At present the overpass crosses the double tracks of the Melbourne-Albury line.

New Switchgear Equipment

East Camberwell Substation, supplying direct current for suburban trains, has been equipped with new type switchgear, the first of its kind to be used by the Department. The switchgear is remotely controlled from Batman Avenue power operations room. The re-equipment is part of a project to convert metropolitan substations from 25 cycles a.c. to the standard S.E.C. frequency of 50 cycles. The project will obviate the need for frequency changers and provide additional power for improving suburban services.

Another improvement at East Camberwell had been the replacement of four rotary converters by two mercury-arc rectifiers; the two doing the same job of changing S.E.C. alternating current to direct current for railway traction. Because of the smaller space required for the new equipment, it had been possible to use more than half of the building as a substation equipment maintenance depot. A new substation has also been constructed at Burnley and equipped with similar switchgear. It is operated by remote control from the Batman Avenue Centre.

WESTERN AUSTRALIA

Railcar Depot at East Perth

Tenders closed recently for the first stage of construction of a new diesel railcar servicing depot at East Perth. The purpose of the depot is to provide complete and on the spot servicing, including engine changes, between the time the cars come off service at midnight and re-commence their daily schedule at 5 a.m. the following morning. The proposed depot will be capable of handling four cars simultaneously within the shed and a further two cars externally in the washdown area. It will be situated on the eastern end of the existing steam locomotive workshop at East Perth Locomotive Depot. At present servicing is carried out on two roads of the steam shed over normal type engine pits which are inadequate to cope with the quick turn-round necessary with the increasing demands of the Metropolitan service requirements.

The new diesel depot will have two floor levels; a lower one for complete service and maintenance of engines and all other components situated below the coach underframe, and a higher level for servicing above car floor. Fuel, lubricating oil, greasing, demineralised radiator water, battery, and electrical facilities all located within the shop will allow for complete servicing to be carried out simultaneously and will enable a quicker turn-round of cars within the time available and considerably improve the working conditions of the maintenance staff.

The building will be approximately 180 ft. long by 60 ft. wide with two internal service tracks on the north side, while on the south side will be situated the control office, battery charging room, demineralising plant, electrical workshop and store facilities. Thirty-four cars are at present operating in the Metropolitan area and require daily servicing. The centralisation of the services in the new depot will overcome present disabilities and avoid unnecessary delays because of movements between servicing points and also congestion at the fueling points.

Rail Welding in East Africa

In situ rail welding by the thermit process on East African Railways & Harbours

PAKISTAN

Flood Damage in Eastern Bengal

Traffic on several metre-gauge sections of the Eastern Bengal Railway was interrupted by the floods and tidal wave in the Chittagong and Noakhali areas recently, and damage to track and structures is reported to be heavy.

INDIA

New Rail Construction

The Railway Board has sanctioned construction of a metre-gauge line from Udaipur to Himmatnagar covering a distance of about 137 miles. The construction work of the new line, which will connect north Gujarat with southern Rajasthan and will also bring Udaipur in direct contact with Ahmedabad, will be carried out by the Western Railway.

Traffic Survey Sanctioned

The Railway Board has sanctioned the traffic survey for construction of a 32-mile Diva-Panvel-Uran broad-gauge line on the Central Railway. The survey will be carried out by the Central Railway

Administration. The construction of this line will help the economic growth of this part of an under-developed Konkan region on the Central Railway.

UNITED STATES

C.T.C. Extension

The Louisville to Nashville Railroad is to extend its C.T.C. installation from Brentwood to Athens onwards to Boyles, a further 95 miles, at a cost of $1,800,000. A single control office at Boyles will regulate traffic over the whole 200-mile section.

Light-weight Wagons for Bituminous Coal

The tare weight of all-aluminium open wagons being built for movement of bituminous coal in West Virginia is only 2¼ tons, and the load 15 tons. Though not sprung or otherwise suitable for main-line traffic, they are equipped with knuckle centre couplers. They have welded Alcoa aluminium bodies and bogies of the same material, and can be made up into trains on standard-gauge track.

Merger Proposals

The Illinois Central Railroad has applied to the Interstate Commerce Commission for authority to acquire stock control of the Louisville & Nashville Railroad. The Illinois Central recently was given permission by the Commission to intervene in the proposed merger of the Seaboard Airline Railroad and the Atlantic Coast Line. The I.C.RR. contends that a merger of these two railroads would be detrimental to its competitive position and adversely affect its service if the merged lines were permitted to continue control of the L. & N., and it requested that as a condition of the merger the Atlantic Coast Line divest itself of its 33·7 per cent ownership of L. & N. stock and that the stock be sold to the Illinois Central.

WESTERN GERMANY

Better Financial Results

The Federal Railway management expects that as a result of implementing modernisation plans and of drastic staff reductions, next year will see net receipts instead of a deficit. The modernisation programme is costing some £200 million a year. Receipts for the first six months of the current year exceeded by £20 million those for the first half of 1959. In two years the number of railway employees has been reduced by 38,000.

FRANCE

Additional Car/Sleeper Facilities

To cope with increasing demand for car sleeper express facilities the National Railways in 1961 is: (*a*) to introduce a new service between Paris and Biarritz; (*b*) to extend the periods during which the Boulogne-Lyons and Paris-Avignon services operate; (*c*) to introduce a new type of double-deck open wagon on which it will be possible to convey cars up to 5 ft. 4½ in. in height without limitation of width between the inside surfaces of the tyres; and (*d*) to provide single-berth compartments in Wagons-Lits Company sleeping cars in these trains for the first time.

ITALY

Accelerations in Sicily

With the introduction of the winter passenger timetable on October 2, timings between Catania and Syracuse have been adjusted to take advantage of the electrification completed during the summer, with savings of up to 27 min. Both coastal main lines in Sicily, from Messina to Palermo and from Messina to Syracuse *via* Catania, are now electrically worked.

PERU

Development Plans

The Government's "Peru-Vía" plan for developing resources in the interior provides for electrification of the Central Railway from the coast to the High Sierra; power would be obtained from a hydro-electric plant to be built on the Mantaro River. The plan also envisages linking of the 4-ft. 8½-in. gauge Central and Southern Railways by an electrified line parallel to the coast.

Publications Received

Directory of Railway Officials and Year Book, 1960-1961. London: Tothill Press Limited, 33, Tothill Street, S.W.1. 8½ in. x 5½ in. 618 pp. Price 60s.—With its 66th year of publication, the scope of the present volume remains unchanged from the extended form adopted in the previous edition, but there are many additional entries, such as the United Kingdom Railway Advisory Service and the Federation of Private Railways in Western Germany. Many changes have been necessitated by the rapidity of railway development in various parts of the world, and particularly the progress with the extension of electric and diesel traction. The Canadian National Railways withdrew the last steam locomotive on April 25, and the Canadian Pacific Railway a few weeks later. In Great Britain, the last railway-built steam locomotive the *Evening Star* emerged from Swindon Works on March 18. The entries for the British Transport Commission and the several Regions of British Railways have been revised substantially.

Non-Destructive Testing.—Solus-Schall Limited has produced a booklet reviewing the site methods of non-destructive testing provided by the company, including visual welding inspection, X-radiography, gamma radiography, penetrants, ultrasonic flaw detection and magnetic particle inspection. Each of these methods is discussed and a good deal of background information is given. Copies are available free from Solus-Schall Limited, County Building, Honeypot Lane, Stanmore, Middlesex.

Inco-Weld "A."—This booklet, issued by Henry Wiggin & Co. Ltd. is designed for the welder of dissimilar metals. For many years it was the general rule that the filler metal should match the higher alloy of the metals being joined. Although this proves satisfactory for some combinations, there are many instances where undesirable deposits have resulted from the filler metal being diluted with the lower-alloy base metal. These difficulties are not insurmountable. The booklet explains with tables, diagrams and photographic illustrations how the Inco-Weld "A" electrode and filler wire have been specially developed. They are claimed to be the first welding materials to be specifically designed for joining dissimilar metals. The publication is obtainable free from Henry Wiggin and Co. Ltd., Publicity Department, Thames House, Millbank, London, S.W.1.

The Use of Welding in Steel Building Structures. By G. Bernard Godfrey, A.M.I.C.E., A.M.I.STRUCT.E., A.M.I.MUN.E. London: British Constructional Steelwork Association, 94-98, Petty France, S.W.1. 11 in. x 8½ in. Paper covers. 35 pp. Fully illustrated with diagrams. Price 3s. 6d.—This is B.C.S.A. Publication No. 14/1960, and is a revised edition of B.C.S.A. Brochure No. 6 originally published in 1952. The text and illustrations have been revised in conformity with the requirements of B.S.449/1959, "The Use of Structural Steel in Building." The subjects dealt with are fillet and butt welds, welded details, and built-up columns, and complete designs are given for a welded plate girder and a crane girder. The object is to give guidance on the design of metal-arc-welded steel building structures, in nominally static conditions, made in mild and high-tensile steels, and designed as simple frames. The brochure is available on application to the Association.

Orenstein—Koppel Products.—A considerable variety of passenger and freight rolling stock, and diesel locomotives up to 250 b.h.p. are built today by Orenstein – Koppel und Lübecker Maschinenbau A.G., which has works at Spandau, Dortmund Bochum, Lübeck and Hattingen. In recent years many main-line passenger vehicles comprising normal types, diners, special saloons and baggage vans have been built; goods stock, though including many ordinary types, has been more notably of mineral tipping wagons up to 200 tons capacity, other special models, and the so-called amphibious enclosed vehicles which can be carried on bogies or floated down a river. All of these are illustrated in a 120-page spiral-bound general catalogue distributed by the export department of the company at Balken-strasse, Dortmund, Western Germany. The text throughout is in German, English, French, and Spanish.

The Role of Public Relations and Publicity in the North Eastern Region

Constantly-changing conditions, and long-standing public prejudice, must be met with energy, understanding, and full use of all modern media of communication

By S. W. Jesper,
Public Relations & Publicity Officer, North Eastern Region

LESS frequently today, perhaps, than in the past—but still too often—adverse criticism on the railways is to be heard in any place where people meet; in a refreshment room; on a bus; in a train. A great deal of this criticism is unjustified and even utterly untrue, but the existence of a false picture in the mind of a large section of the community constitutes a major challenge to the railway public relations and publicity officer, and one which he must tackle through the approach to the public of members of railway staff of all ranks.

In the North Eastern Region, the staff knows that its trains now have a far better record of punctuality than was the case a few years ago. The benefits brought by diesel motive power, and their widespread appreciation by the public, also are recognised, as are the improvements already carried out and still being made to track, signalling, marshalling yards, and mechanised handling. Nevertheless, it is not enough that only the staff should know of these things—they also must be brought to the notice of the public as a whole.

This is done by the Department of the Public Relations & Publicity Officer, and is a very important aspect of the work of that office. The public is informed by means of articles in the Press, by correspondence, posters, handbills, window displays, brochures—in fact, by every device known to publicity.

Even this intensive work is not enough: the message must be conveyed even more intimately to public and staff. A benevolent sort of brain-washing must take place to scour away old-established prejudice and mistrust. People must be convinced that the lean years have passed: the spectre of the daily-dusted railway sandwich must finally be laid.

Conditioning the Public Mind

The combination of the separate function of "public relations" and "publicity" under one departmental head may tend to hide a distinction, both in media and technique, but it is an acceptance of the principle that the process of conditioning the public mind—of creating a climate of good will in which business can be secured successfully—and the more direct effort of selling particular services, are all part of the same process. Indeed, those actively engaged in selling passenger and freight transport are becoming increasingly aware of the importance of good public relations in everyday work.

"Publicity" today embraces much more than what formerly was known as "advertising." The publicity man is concerned with the production of informative material. If he is public-relations-conscious, his technique is improved, and his work has greater intrinsic value.

Basically, the art of public relations is as old as human nature but, in its modern form, it first made its appearance in this country, appropriately enough as far as this article is concerned, on the railways. It was nearly 35 years ago that Mr. (now Sir) John Elliot was appointed Public Relationships Officer to the Southern Railway. His position was intended to provide a link between the General Manager's Department and public and local associations and other bodies in the area served by the system.

Greatly Developed Art

From that time, the art of public relations has greatly developed. Publications, films, and radio are old friends: but with commercial television in particular, the field has widened almost astronomically. Public relations has come to be defined as "the deliberate, planned, and sustained effort to establish and maintain mutual understanding between an organisation and its public." It most definitely is not a means of creating a smokescreen to shelter either management or staff. Good public relations are only created and maintained by a clear understanding of the problems, achievements, and even shortcomings of the undertaking, which must take the public into its confidence. This is a simple and true statement, and good public relations must deal with essential truths.

There is an ever-present danger of public relations becoming a means unto itself; a prime function with its own codes, clichés, and catch-phrases. Books are written about it; phrases such as "consumer reaction" and "market research" slip glibly from the tongue; it threatens to become a science in its own right, whereas it should be regarded simply as a useful tool to help sell services. In an ideally-run concern, the need for publicity or public relations does not really exist, apart from dignified reminders of what one has to offer. It is the fallibility of the service or the servant that makes public relations necessary.

Why is a particular article or service bought? I suggest that there are three possible reasons:—

i. It is thought to be the best for the purpose.
ii. It is the only one available.
iii. It's got 4d. off this week.

Except for the enthusiast and the technically-minded—and the public relations officer well appreciates the worth of these sections of the community—the general public is not vitally interested in railway modernisation as such, but merely and very much as a means to the ends of fast, punctual passenger trains; quick delivery of freight with no breakages; cleanliness, and courtesy. This last point cannot be over emphasised. It is the little thing, the little kindness that remains in the mind long after the journey itself is forgotten.

The general pattern of public relations activity includes the best use of all the many media of communication now available. Full information on the many day-to-day developments within the organisation as well as future plans are circulated currently in the form of news releases.

Another important aspect of the work is the preparation and supply of feature articles, either prepared in full or as information for outside feature writers.

A constant stream of information is given in reply to incoming inquiry. Official confirmation or denial is regularly sought on day-to-day incidents and comments on observations made in newspapers are regularly required. To meet this, a 24-hr. service is given seven days a week. The value of this particular service must be measured not only by what gets into print, but also by what is kept out. An instance occurred not long ago when, in the early hours of the morning, a newspaper sought confirmation that a certain train had run into a "hail of bullets" involving a fatality. We were able to confirm that the train in fact had run into a herd of bullocks, one of which had not survived the impact.

Latent Enthusiasm

Railways have an immense backing of latent enthusiasm, and the Public Relations & Publicity Officer stimulates this to the utmost. Visits to railway installations are encouraged and today, in the North Eastern Region, between eight and ten thousand people, including students and members of enthusiast societies, make such visits in the course of a month.

Yet another means of getting information across to the public and thereby enhancing the undertaking's reputation is the use of the public platform. Wherever an audience can be found, the Region can always provide films or speakers or both.

In many cases, speakers and/or films are provided for meetings of established bodies like rotary clubs, trade associations, and chambers of commerce. Special meetings also are often arranged exclusively for railway purposes. Sometimes, these take the form of film shows designed with the object of stimulating

a travel appetite. Sometimes these and other films are shown to members of the Commission's staff, their families, and invited guests.

Open Forums

The open forum is a new channel of public relations activity in the Region. A large hall is booked and invitations are issued to representatives of civic and business interests and to the public at large to come and hear what the Region intends to do in the field of modernisation, and why and how this may affect the inhabitants of the town in which the meeting is being held.

The invitation informs the prospective audience that a panel of specialists will be present to solve individual problems and to answer questions. No punches are pulled at these open forums : no holds barred. The experiment has been tried in two cities in the West Riding to date, and more places will be visited this winter. Criticism was freely given—and this was expected, for the meetings were deliberately held at places where local bones of contention existed—but we are convinced that we were able to implant in our audiences an awareness and appreciation of our own problems. Packed halls and sympathetic and congratulatory headlines in local newspapers have been ample reward and a spur to future endeavour.

A fierce thorn in the public relations officer's flesh makes itself felt when, by some shortcoming on the part of the undertaking, the reputation he has tried to build up is destroyed by one thoughtless act or off-handed attitude ; one little discourtesy ; one failure to tell the customer what is happening at the time (particularly in the case of delays to trains). Real shortcomings of any sort assume a prominent place in the public mind and remain longer in the memory than all the editorial stories announcing official policies and plans.

It is, therefore, an increasingly important function of the public relations officer to operate as it were in reverse and, in addition to telling the public what the management is thinking and doing, inform the management what the public is thinking and doing. He must create a "public relations" consciousness in every member of the railway staff.

This is attempted in a variety of ways. Daily newspapers are scrutinised, and cuttings bearing on railway activity are sent to all officers concerned. All comment is studied with extreme care and any shortcomings are brought to the notice of the appropriate departments to enable remedial action to be taken whenever possible.

Where criticism is unwarranted, the true facts are publicised and, because a good proportion of criticism is ill-informed and baseless, newspapers are more and more tending to seek our comments before publishing criticism so that both sides can be fairly and simultaneously presented.

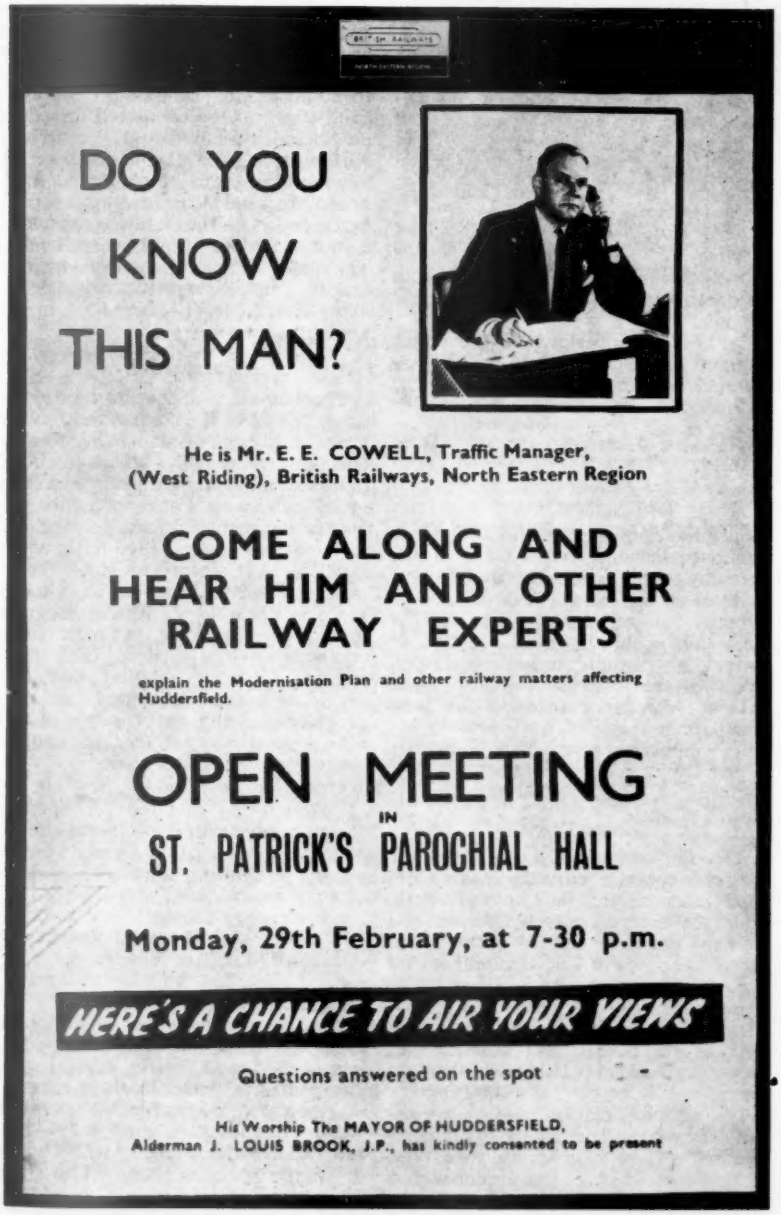
Letters Published in the Press

Readers' letters are a very valuable thermometer to an editor. They indicate the interest and keenness of the readership, and it is an ill-advised editor who withholds a letter from publication merely because it slams an organisation. Similarly, editors are usually willing to give equal prominence to official replies but we cannot claim editorial goodwill as a right. Nevertheless, it is an important task of a public relations officer to attract it.

To stimulate interest, the Region produces a monthly staff magazine and a four-page newspaper. Through the magazine a monthly cash award is made for the best helpful action performed by a member of the staff—and equal prominence is given to bad behaviour. In this way, employees are impressed with the importance of upholding regional tradition and creating and maintaining goodwill.

Day-to-day complaints received direct from the public may reveal unknown shortcomings. Every one is investigated and pursued, and all are regularly analysed to trace and strengthen weak spots.

Of necessity, this article only briefly outlines the many and constantly-developing activities of the public relations department of the North Eastern Region. As modernisation proceeds and new life spreads through the system, these activities will broaden and become adapted to meet that development. In an imperfect world, it is only on paper that every employee of a large organisation not only continually gives of his best, but is seen to do so. While this imperfect state of affairs continues, there will always be a place for a public relations department.


DO YOU KNOW THIS MAN?
He is Mr. E. E. COWELL, Traffic Manager, (West Riding), British Railways, North Eastern Region
COME ALONG AND HEAR HIM AND OTHER RAILWAY EXPERTS
explain the Modernisation Plan and other railway matters affecting Huddersfield.
OPEN MEETING
IN
ST. PATRICK'S PAROCHIAL HALL
Monday, 29th February, at 7-30 p.m.
HERE'S A CHANCE TO AIR YOUR VIEWS
Questions answered on the spot
His Worship The MAYOR OF HUDDERSFIELD, Alderman J. LOUIS BROOK, J.P., has kindly consented to be present

Poster displayed in Huddersfield to advertise an Open Forum

Electric Supply for Glasgow Suburban Services

Power distribution arrangements and supervisory control for Scottish Region 50-cycle electrification

Cathcart electrical control station

THE power distribution system of the Glasgow suburban electrification, British Railways, Scottish Region, is controlled from the electrical control station at Carmunnock Road, Cathcart. For the North of Clyde lines, which come into full service on November 7, duplicate power supplies are taken at 25-kV. from the South of Scotland Electricity Board at Parkhead Feeder Station and at Dalreoch Feeder Station. In the case of failure of either of the supplies a duplicate 25-kV. supply is also available from the South of Scotland Electricity Board at Motherwell Feeder Station. From Parkhead Feeder Station supplies are taken by two railway-owned 25-kV. gas-filled cables to sub-feeder stations at Finnieston and Westerton, and the supply at Motherwell Feeder Station is taken by one railway-owned 25-kV. oil-filled cable to Coatbridge Sub-Feeder Station, and at these feeder and sub-feeder stations supplies are given to the overhead traction equipment at 25 kV. and/or 6·25 kV. through oil circuit breakers. In addition, on the North of the Clyde there are 10 track sectioning cabins where the overhead traction equipment is sectioned through oil circuit breakers. Motorised switches are also installed at neutral sections and certain other places to enable remote overhead switching to be carried out.

At certain feeder stations, sub-feeder stations and track sectioning cabins 25/6·26-kV. transformers are installed to change the voltage to feed 6·25-kV. sections of the overhead equipment. These transformers are also controlled by oil circuit breakers. All the oil circuit breakers controlling the incoming feeds from the electricity board, the 25-kV. oil-filled and gas-filled cables, the 25/6·25-kV. transformers and the feeds at 25 kV. and 6·25 kV. to the overhead traction equipment, are controlled from the control station as are the motorised switches.

Facilities are provided on the mimic diagram for controlling and indicating oil circuit breakers and motorised switches as follow:—

North of Clyde :			
Number of oil circuit breakers	...	...	87
Number of motorised switches	...	...	36
South of Clyde :			
Number of oil circuit breakers	...	...	47
Number of motorised switches	...	...	12

Facilities are also provided to indicate maximum demand and voltage at the incoming supply points, Buchholtz alarm facilities on the main 25/6·25 kV. transformers, auto-reclose operation on the track oil circuit breakers, failure of normal or standby signalling supply, failure of the reference voltage for the distance impedance protection of the track circuit breakers, a decrease in gas or oil pressure on the 25-kV. railway owned cables and certain other minor alarms.

Mimic Diagram

The mimic diagram installed in the control room is curved to facilitate observation from the control desk, where the electrical control operator and assistant electrical control operator sit, and is composed of 1 in. square moulded tiles, the feeders and tracks being in the form of suitably coloured lines..

Up tracks are in red, down tracks in blue, 25-kV. busbar and power cables in white, and 6·25-kV. busbars in orange.

The circuit breakers and motorised switches are represented by discrepancy switches. These switches are twist type, the knob of which is translucent with a bar across it. The bar lines up with the feeder to signify the O.C.B. to be closed and lies across the feeder to signify open. An indication lamp integral with the switch illuminates the knob whenever the switch position is not in agreement with the oil circuit breaker, which it represents. This form of diagram is fully flexible for changes of switching or for extension, as it is only necessary to fix the required sections and switches into the existing mosaic mounting plates.

Each wing on the control desk has two telephone handsets. The black handset provides, via keys on the desk, telephone communication via the supervisory telephone system with feeder stations, sub-feeder stations and track sectioning cabins. The white handset provides, via keys on the desk, communication by three electrification telephone circuits. In addition, this handset on the right-hand wing can be connected directly to the electricity board's grid control at Kirkintilloch, and the handset on the left-hand wing can be connected to the board's central telephone exchange at headquarters. The handsets match the colour of the operating keys on the desk. The desk also accommodates metering facilities, line changeover switches, line alarms, and local alarms from the apparatus rooms.

Apparatus Rooms

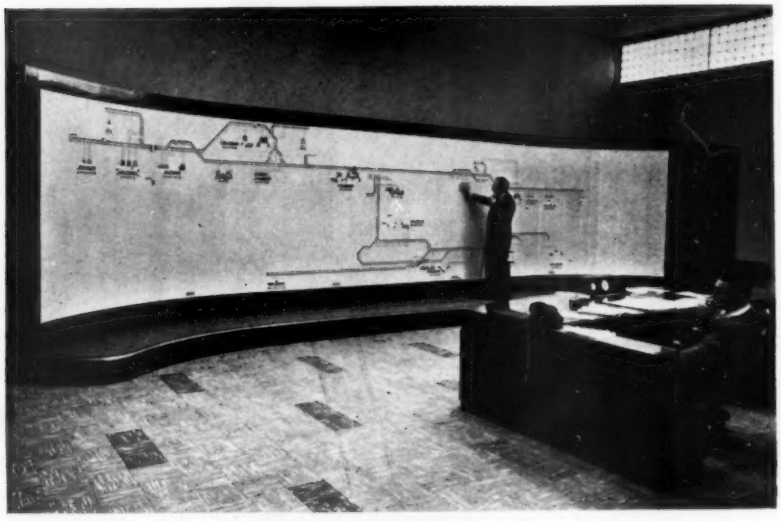
There are two apparatus rooms, one on each side of the control room, which house the equipment in the form of telephone type relays and uniselectors mounted on jack-in groups fitted in dust-proof cubicles. Each set of cubicles houses a system which can comprise up to eight stations. Five systems are installed at Cathcart to cater for the existing electrification scheme, although space is available for further expansion up to nine systems. Complementary equipment is installed at each feeder station, sub-feeder station and track sectioning cabin. A test cubicle is provided to enable the operation of racks of equipment to be checked and any necessary adjustments made.

Operation is via pilot wires, one pair of pilots being required for operating signals from control to out station, and one pair for indication signals from out station to control. The additional pair of wires is associated with the above for the supervisory telephone speech circuit. All six of the above pilot wires are duplicated and line changeover equipment is installed, with continuous line monitoring and alarms.

As there are a number of stations on each pilot system, voice frequency signalling is used, and for the normal supervisory control and indication circuits a common frequency plus a particular station frequency is employed. Thus, for eight stations there will be nine different frequencies employed for signalling controls and indications. In addition, there are frequencies for line tests, line changeover, and voltage metering.

The operation of a discrepancy key causes the lamp inside the key to flicker, a uniselector to find the particular circuit concerned, and the transmission of the particular station frequency in addition to the common frequency down the pilot wires, thus "seizing" the required station. The equipment then selects the particular facility required by sending a number of station frequency pulses or normal pulses and then a number of common frequency or reverse pulses. These pulses operate uniselector type switches arranged in a self-checking circuit to select the facility required. The open and closed lamps then light on the mimic diagram at the station concerned and the operation desired can then be carried out by turning the appropriate key which causes an operate pulse to be transmitted.

The operation of the O.C.B. concerned causes an indication signal to be transmitted back to the control station resulting in the extinguishing of the lamp in the key, thus indicating that the operation is satisfactorily completed.



General view of control room, showing mimic diagram and control desk

Electrification Telephone Exchange

Electrification telephones are installed at approximately every quarter mile throughout the electrification and at other key points, stations, and signalboxes. Eleven telephone circuits consisting of approximately 220 telephones are required for the North of Clyde lines and a further 13 telephone circuits with approximately 200 telephones will be required for the South side lines.

These telephones terminate on the telephone exchange switchboard, which has in addition to this a G.P.O. line and private line to the South of Scotland Electricity Board headquarters at Invalair Avenue which can be switched through to Grid Control. A master clock is installed in the telephone equipment room which controls slave clocks in the control station and in the feeder stations, sub-feeder stations and track sectioning cabins.

Duplicate and independent power supplies are taken for the control room services from the local Electricity Board, each capable of dealing with the full load.

The supervisory equipment is fed from duplicate batteries and chargers with changeover switch arrangements. Emergency lighting from the batteries is switched on automatically in the event of failure of both main supplies.

The control room is heated by hot water floor heating through pipes buried in the floor of the control room, and also by a pressure system of ventilation. The pressurised air passes from the control room into the apparatus rooms via louvres in the walls to maintain the apparatus rooms at slight air pressure to minimise the entry of dust.

Office accommodation is provided for the appropriate staff, together with messrooms and lavatory facilities. A garage, store and workshop are also included in the building.

The principal contractors are as follows:—

Supervisory remote control equipment	Automatic Telephone & Electric Co. Ltd.
25-kV. gas-filled distribution cable.	W. T. Glover & Co. Ltd.
Oil-filled distribution cable	W. T. Henley's Telegraph Works Co. Ltd.
6·25-kV. feeder cable ...	Scottish Cables Limited
25/6·25-kV. power distribution transformers	Hackbridge & Hewittic Electric Co. Ltd.
Batteries and battery chargers	Tungstone Products Limited
Power distribution and voltage transformers	Foster Transformers Limited

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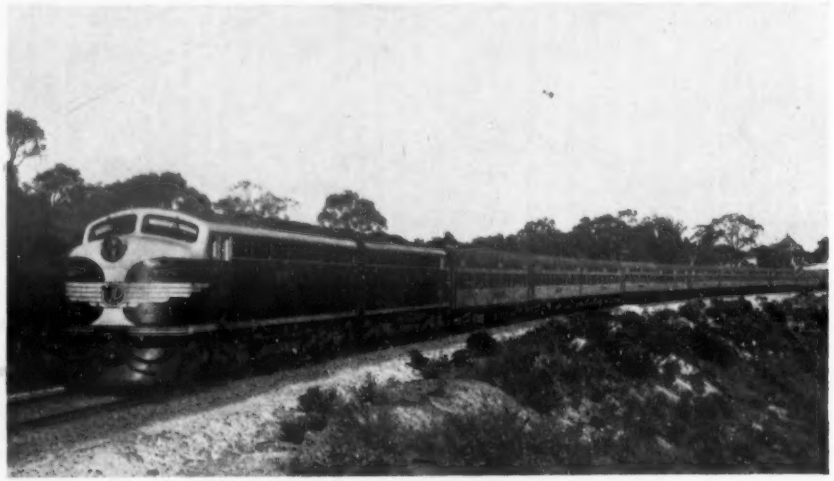
BUILDING OVER BIRMINGHAM NEW STREET STATION.—Reference to schemes for erecting buildings over the platforms and tracks of Birmingham New Street Station, London Midland Region, was made by Sir Herbert Manzoni, City Engineer & Surveyor, Birmingham, in his Presidential address to the Institution of Civil Engineers on November 1. Two such schemes, he stated, which had been prepared had not been proceeded with, principally because of problems connected with ventilation; but in the past 20 years it had become more apparent that the expansion of the city centre was of growing importance and that the covering over of the station would be highly advantageous. The railway management has grasped the opportunity afforded by the electrification scheme to consider this matter seriously and final decisions are awaited. The civil engineering difficulties were considerable.

IMPORTANCE OF ENGINEERING SERVICES TO MANAGEMENTS.—Improvement of productivity through co-ordination of the knowledge and experience of engineering members of the executive of a business into one common plan will be the basic theme of a one-day conference of the British Institute of Management on December 1. Entitled "The Importance of Engineering Services to Modern Management," it will be held at the Connaught Rooms, Great Queen Street, London, W.C.2. Preventive maintenance, with work study, plant history, modification to existing machinery, job costing and budget comparisons will be considered in papers by Mr. B. E. M. Monck, Group Director of Factories, Spicers Limited, Mr. H. Bamford Preston, Organisation Division, Unilever Limited, and others. The chairman of the conference will be Mr. E. W. Hancock, Past National President of the Institution of Production Engineers. Further information may be obtained from the British Institute of Management, 80, Fetter Lane, E.C.4, tel.: Holborn 3456.

BETTER SERVICE FOR CRAIGENDORAN-ARROCHAR LINE.—The forthcoming electric service on the Airdrie-Helensburgh line of the Scottish Region, British Railways, will give improved connecting services at Craigendoran for Arrochar & Tarbet, on the West Highland line. Adjustments will be made in the timings of the diesel railbus serving Helensburgh Upper, Rhu, Shandorr, Garelochhead, Whistlefield, and Arrochar & Tarbet. The 10.5 a.m. from Arrochar will leave at 9.55 a.m., arriving at Craigendoran at 10.42 a.m.; the connecting electric train will arrive Glasgow Queen Street at 11.35 a.m. The 1 p.m., Saturdays only, from Arrochar, will leave at 12.55 p.m., arriving at Craigendoran at 1.42 p.m., with arrival by connecting train in Glasgow Queen Street at 2.35 p.m. The 6.14 p.m., Mondays to Fridays, from Craigendoran will leave at 6.6 p.m., arriving at Arrochar at 7 p.m., and the connection will leave Glasgow Queen Street at 5.32 p.m.

THE 1961 JOHN MORRIS MEMORIAL AWARD.—The British Industrial Truck Association is again offering as first prize in its annual competition, a place at the advanced materials handling training course to be held at Lake Placid, U.S.A., in June, 1961. In addition there will be cash prizes of £25, £15 and £10. Candidates, who must be sponsored by their employers, will be required to write a paper on one of the following three subjects: how to organise a materials handling training course at advanced level in this country; consider a hypothetical problem in materials handling, *e.g.*, starting up a new factory, giving suggested plant layout, showing internal materials movement, and examining, and answering the problems involved; the design of warehouse and storage areas to allow efficient handling by industrial trucks, setting forth all the points to be taken into account when planning. Requests for full particulars of the competition, the Lake Placid course, and application form should be made to the British Industrial Truck Association, 94-98, Petty France, London, S.W.1.

Diesel Motive Power Overseas



Clyde-General Motors diesel-electric locomotives of Class "S" hauling the Victorian Railways "Overland" express

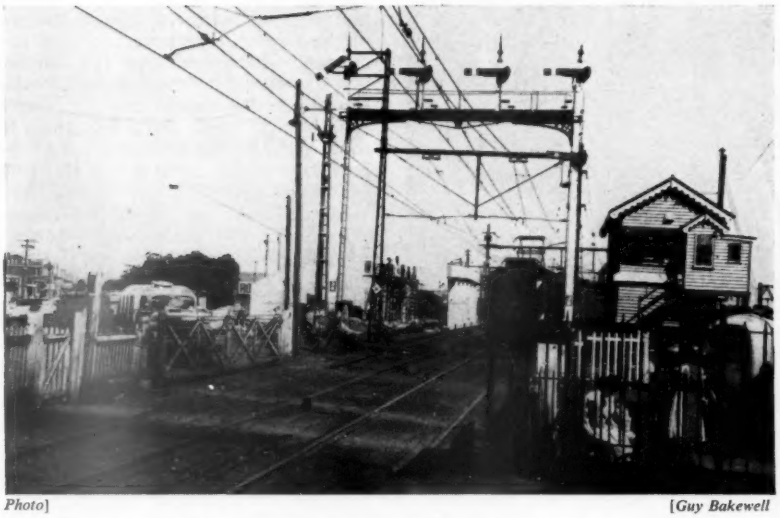
Multiple-unit diesel railcar supplied by the Commonwealth Engineering Co. Ltd., Australia, on the Malayan Railway

Passenger train drawn by 1,850-h.p. English Electric Co. Ltd. diesel-electric locomotive at Port Sudan, recently delivered to Sudan Railways

Brisbane-Townsville freight train, Queensland Railways, headed by Class "1450" diesel-electric locomotive supplied by Clyde Engineering Co. Ltd.

Abolition of Level Crossings in Victoria

Construction of overpasses and deviation of roads in the suburban and metropolitan areas



Photo] [Guy Bakewell

Level crossing at Newport, showing, in the background, part of the sub-structure for the overpass

IN 1955 the Victorian Government passed legislation to facilitate the abolition of level crossings and established a level crossings fund for the purpose. This followed a report from an inter-departmental committee of three, consisting of the Chief Civil Engineer of the Victorian Railways, the Country Roads Board Civil Engineer, and the Civil Engineer of the Public Works Department. This committee had been appointed by the Government in 1954. It had recommended that a start should be made by abolishing five busy suburban level crossings in the metropolitan area; making road deviations in three country areas where road and railway intersected in several places in the same area; and abolishing six country level crossings where main highways and main railway lines crossed.

Work in the Metropolitan Area

Work was first started at the northern suburb of Clifton Hill where an extensive overline bridge with several road approaches was built. This was followed by an underline bridge at a busy level crossing at Footscray, west of Melbourne. This crossing was used by 7,000 vehicles and 169 trains between the hours of 7 a.m. and 7 p.m. The road level was lowered 10 ft. and the railway regraded and raised 8 ft. over the former level of the crossing. This project was completed at a cost of £300,000. At Moorabbin, on one of the south-eastern suburban lines, an overline bridge was constructed by lowering the railway and a new station was built. The latter dovetails in with the future third track which is to be built between there and Caulfield.

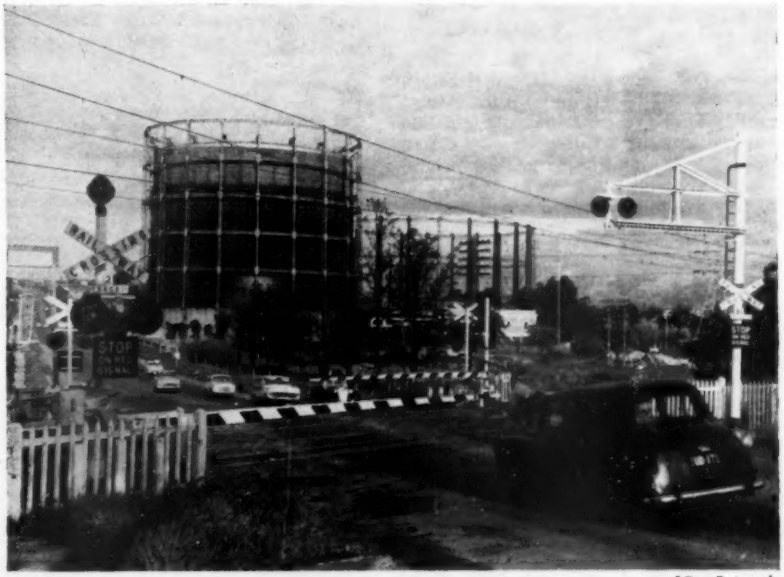
A somewhat similar project is being carried out at Elsternwick on the southern suburban line to Sandringham. The railway is being lowered 20 ft. and a new platform built below ground level. Station buildings will be at surface level. As in the case of Moorabbin, while the project is being carried out, it has been necessary to build a temporary station and track and install a temporary level crossing located nearby which is protected by automatic boom barriers. However, unlike Moorabbin there is a street electric tramway to be provided for and at present part of the future bridge has been completed with a temporary tramway crossing over the cutting in which the future station and railway will be located. Temporary main-line tracks, platform and station buildings were transferred from the Moorabbin site for use during the construction period at Elsternwick. Removal gangs used a giant crane at night time to move the 18-ton tramway square rail crossing to its new site. Some £500,000 was spent at Moorabbin. The work at Elsternwick is expected to be completed next year.

Overline Bridge at Newport

The last of the original five level crossings is at Newport. Work has started on the sub-structure of an overline bridge. Original plans provided for the road to be lowered under the railway, but because of technical difficulties such as rock excavation and re-design of signalling an alternative scheme for an overline bridge was found to be some £40,000 cheaper. From the railway point of view Newport is probably the busiest of these five level crossings.

Suburban traffic for Williamstown passes through it and it is the junction for a local service to Altona. It is also the junction for an outer suburban service to Werribee and the main south-western line to Geelong and beyond.

Additional railway traffic passing through Newport is that to and from the Newport-Sunshine goods line and inter-state traffic for South Australia when it is routed via Geelong. There are also marshalling yards at Newport and the present level crossing gates are often closed for shunting operations. One of



Photo] [Guy Bakewell

Automatically-operated boom gates in the Melbourne suburban area, showing level crossing closed to road traffic

Photo] [Guy Bakewell

Partly completed island platform at Elsternwick, with temporary station and track to the right

Victoria's daylight expresses, "The Mildura Sunlight," is routed through Newport on its forward journey.

A somewhat different method was adopted to eliminate level crossing delays on the Melbourne-Bendigo line at St. Albans which is 11¼ miles north-west of Melbourne and the terminus of a suburban service. Here, the station was just beyond the level crossing so, at a cost of £53,000, a new station, two sidings and signals were placed just south on the Melbourne side of the crossing. Now the railway gates need only be operated for passing country trains.

Work will probably begin in 1961 on the construction of an overline bridge at Strathmore on the suburban section of the main north-eastern line to Albury. The bridge will incorporate clover leaf design and will be built without altering the level of the railway. On the eastern side room will be left under it for a third track. Traffic counts recently showed that the gates at Strathmore were closed for 4 hr. 14 min. between 7 a.m. and 7 p.m. The cost will be £327,000, and the constructing authority will be the Victorian Railways.

Underline Brldge Construction

Near Oakleigh, on the suburban section of the main eastern line to Gippsland, an underline bridge is to be constructed at a cost of £400,000. This will not be started for about 18 months, and the plan provides for two 26-ft. wide roadways with pedestrian subways under the railway line which crosses the road at an angle of 55 deg. A 12-hr. count of traffic last January disclosed that 11,680 vehicles and 137 trains passed over the crossing at which the gates were closed for a total of 3 hr. 6 min. Extra land needed for the project will have to be resumed and buildings on it demolished.

The Level Crossings Committee considered two other schemes for a road overpass and a regrading of the railway line so as to let the road pass over the railway without changing its level. They were rejected because of cost factors and were not so favourably regarded by local business interests.

Road Deviations in Country Areas

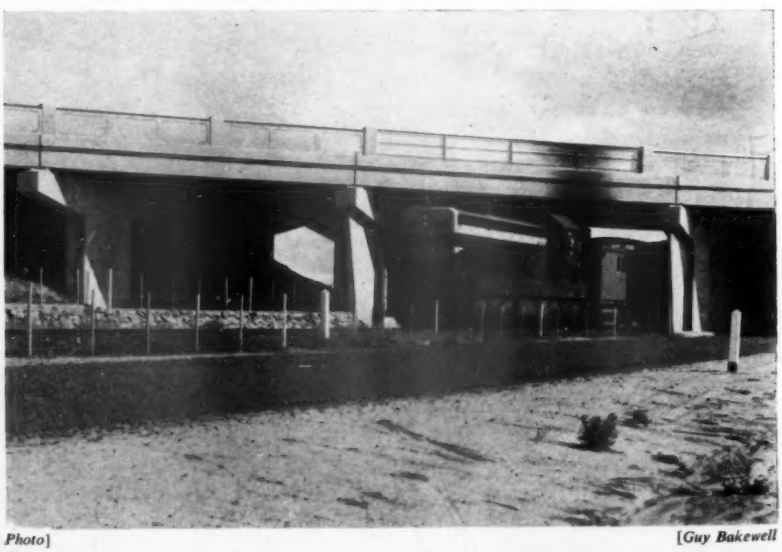
Road deviations originally recommended in three country areas have been completed. The Hume Highway (Melbourne-Sydney Road) was deviated at Glenrowan to avoid the need for heavy through-road traffic to cross the main north-eastern line twice, once on each side of the station. In the Yan Yean-Mernda area on the short country line to Whittlesea, alteration to the road eliminated the need to cross the railway four times and deviations of the main road near Clunes on the Mildura line between Ballarat and Maryborough avoid the need for road traffic to cross the railway twice. A similar improvement was made on the Bendigo line.

Standard-gauge Construction

Construction of the standard-gauge line from Melbourne to Albury has been planned so that wherever possible level crossings will be eliminated. The standard-gauge track will be routed in the suburban area from Melbourne *via* the western suburb of Sunshine and thence along the route of the Albion-Broadmeadows goods line. Two major crossings on this route will have a high priority. One is at Sunshine and the other at Albion. Work has already started at the northern end of Sunshine Station for the construction of an overline bridge at Hampshire Road which is at present crossed by five railway tracks. Part of a footbridge has already been removed and excavation work has commenced. The footbridge will be replaced by a pedestrian subway with ramps.

Another overline bridge is to be built at Albion which is the physical junction for the goods line across to Broadmeadows. Sunshine is the junction for the suburban line to St. Albans and is also the point at which the northern line to Bendigo and beyond separates from the main western line to Ballarat (*via* Bacchus Marsh). When the standard-gauge line becomes operational, Victoria's two busiest inter-state expresses will pass through, the future "Sydney Limited" and the present "Overland" to Adelaide.

Country works planned by the committee include the elimination of level crossings where the Hume Highway will cut across the standard gauge railway. Overline bridges are planned at Craigieburn and Tallarook. The question of avoiding other crossings farther north by deviating the Hume Highway to a new alignment on the eastern side of the railway in the Chiltern-Barnawartha area is planned.



Photo] [Guy Bakewell

Corio overpass on the south western line between Melbourne and Geelong

RAILWAY NEWS SECTION

PERSONAL

Mr. G. H. Binnie, Chief Mechanical Engineer, Nigerian Railway Corporation, has retired. Mr. F. A. O. Phillips has been appointed to succeed him.

Mr. V. K. Rangaswami, Senior Deputy Manager, South Eastern Railway of India, who, as recorded in our October 21 issue, has been appointed Chief Commercial Superintendent of that railway, was born in 1908.

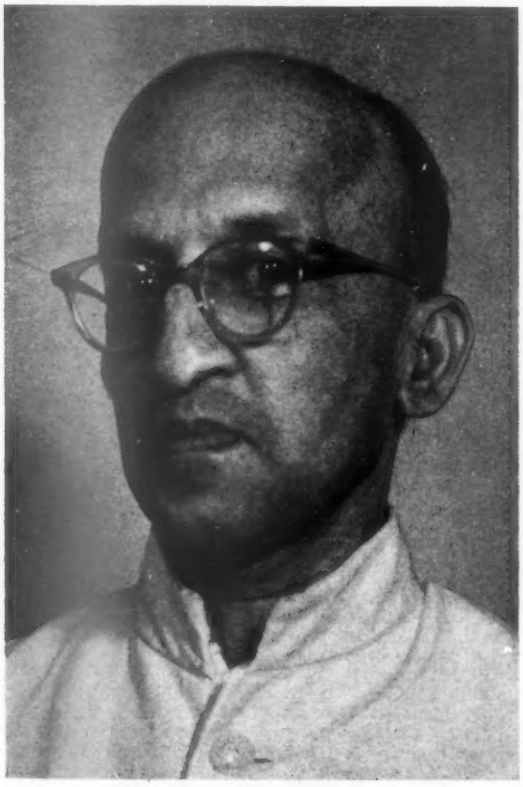
Mr. E. J. Hughes, Assistant Chief Accountant (Expenditure), Malayan Railway, has been appointed Chief Accountant of that system.

We regret to record the death of Sir Cecil McAlpine Weir, a part-time Member of the British Transport Commission.

We regret to record the death of Mr. C. Barrington, a member of the British Road Services board of management.

accepted the Presidency of the Railway Benevolent Institution for 1961, and Mr. K. W. C. Grand, a Member of the British Transport Commission, has accepted the Chairmanship for a further year.

Mr. E. W. Isaacs, Additional Member (Mechanical), Indian Railway Board, who, as recorded in our September 30 issue, has been appointed a Member (Engineering) of the Board, was born in Lahore and educated in Simla and Lahore. He joined the former



Mr. V. K. Rangaswami
Appointed Chief Commercial Superintendent, South Eastern Railway, India

Mr. E. W. Isaacs
Appointed a Member (Engineering), Indian Railway Board

He joined the Bengal Nagpur Railway as a Traffic Probationer in December, 1932, and was confirmed as Assistant Traffic Superintendent in April, 1934. He was promoted to the position of District Commercial Officer in 1944, and also worked for some time as District Transportation Superintendent. He was confirmed in the senior scale appointment of District Commercial Officer in January, 1950, and officiated as Deputy Transportation Manager during 1951. He returned to his position of Deputy Transportation Manager in January, 1952, after serving for a short time as a District Transportation Officer. On regrouping, Mr. Rangaswami became Deputy Chief Operating Superintendent of the Eastern Railway in April, 1952, and on the formation of the South Eastern Railway in August, 1955, he transferred to that Railway in the same capacity. In 1957, he was posted as Deputy General Manager (Personnel), and in January, 1958, was promoted to be Senior Deputy General Manager, the position which he now vacates.

Mr. H. H. Jenkins, Assistant District Engineer, Bristol, Western Region, has been appointed District Engineer, Cardiff.

Mr. Arundale, Sales & Development Assistant to the Line Traffic Manager (Great Eastern), Liverpool Street, has been appointed District Goods Manager, London, Broad Street, London Midland Region.

Mr. F. Masdin, Assistant to Traffic Manager (Special Duties), Sheffield, British Railways, Eastern Region, has been appointed Commercial Assistant to the District Commercial Officer, Sheffield.

We regret that redesignation of Canadian National Railways senior executive titles, referred to in our October 28 issue, was erroneously attributed to the Canadian Pacific Railway.

Maj.-General G. N. Russell, Member of the British Transport Commission and Chairman of the Eastern Area Board, has

North Western Railway in 1928 and for the greater part of his service, he worked on the old East Bengal Railway, where he was given several special assignments on reorganisation. He built up the first Civilian Maintenance Unit in the country for repair to service aircraft from 1942 to 1944. Later, he served in the Eastern theatre for movement of essential material to the war front. He was promoted to be Deputy Chief Mechanical Engineer on the former East Indian Railway in 1948, and in June, 1950, he joined the Railway Board as Officer on Special Duty investigating the metre gauge repair position for rolling stock. Subsequently he became responsible for reports on derailments on the railways. In January, 1951, he transferred to the Assam Railway as Deputy Chief Administrative Officer, and in June, 1951, he joined Chittaranjan Locomotive Works as Deputy Chief Mechanical Engineer. In April, 1953, he was promoted to be Chief Mechanical Engineer, and in 1957 he assumed his duties on the Railway Board as Additional Member (Mechanical).

Mr. G. Coaker

Appointed Movement Superintendent (Great Eastern), Liverpool Street, Eastern Region

Mr. R. A. Long

Appointed Commercial Superintendent (Great Eastern), Liverpool Street, Eastern Region

Mr. P. Rees

Appointed District Engineer, Shrewsbury, Western Region

Mr. G. Coaker, Commercial Superintendent (Great Eastern), Eastern Region, Liverpool Street, who, as recorded in our October 28 issue, has been appointed Movement Superintendent (Great Eastern), Liverpool Street, entered the service of the London & North Eastern Railway as a Traffic Apprentice in October, 1929. After training at various District Offices and depots, he was appointed Assistant Yardmaster, Kings Cross Goods, in October, 1933, and became Yardmaster, Lincoln, in February, 1938. From September, 1939, to November, 1945, he served with H.M. Forces, attaining the rank of Colonel. In September, 1945, while still in the Forces, he was appointed Assistant District Superintendent, Lincoln. Two years later he became Assistant London City Manager, a position which was redesignated Assistant District Goods Superintendent (London City) in April, 1950. He was appointed Assistant to Commercial Manager (Development) Eastern Region, Liverpool Street, in March, 1954, and became Commercial Superintendent (Great Eastern), three years later. Mr. Coaker was awarded the M.B.E. (Military Division), in the Birthday Honours, 1940, and the O.B.E. (Military Division), in 1945.

Mr. T. P. Strafford, Divisional Operating Superintendent, Derby, London Midland Region, has been appointed Divisional Traffic Manager, East Lancashire Division, Manchester.

Mr. J. R. Garwood, M.B.E., M.S.M., M.Inst.T., Divisional Superintendent (Central Road Services), South East Division, who, as recorded in our October 28 issue, has retired, joined the staff of the London County Council in 1919 and transferred to the tramways department as a conductor two years later. In 1928 he became an inspector, and subsequently district inspector and district superintendent. In 1941 he was appointed Assistant Divisional Superintendent and in 1948 was promoted to be Divisional Superintendent (South) (Trams & Trolleybuses). When London Transport's road services were combined and reorganised into four divisions in 1950, he received the appointment he has now relinquished. Mr. Garwood was awarded the M.S.M. in 1918 for service in France, and in 1953 was created M.B.E. for his work in connection with the 1950-52 tram conversion scheme.

Mr. R. A. Long, Economic Survey Officer, Eastern Region, who, as recorded in our October 28 issue, has been appointed Commercial Superintendent (Great Eastern), Eastern Region, Liverpool Street joined the L.N.E.R. at Leeds, in 1935. After gaining experience at various stations, and in district and head-quarters commercial offices in the North Eastern Area, he completed the training of a Traffic Apprentice in the Southern Area. After a period on the relief staff as a Station Master and on special duties, he was appointed Assistant to the District Superintendent, Manchester, in 1942. The following year he entered the Rates & Statistics Section of the Chief General Manager's Office. In 1944 he became Head Office Inspector to the Superintendent (Southern Area), and Locomotive Running Superintendent (Western Section), and subsequently occupied the positions of Deputy Chief of the Trains Section and Chief of the Timetable Section in the office of the Passenger Manager (Southern Area). In 1948, he became Chief of the Central Timing and Engine Diagramming Section, Southern Area (Eastern Section), and in the following year he was appointed Trains Assistant to the Operating Superintendent (Eastern Section). He became Assistant (Freight Trains) to the Operating Superintendent, Eastern and North Eastern Regions in 1950 and, a year later, joined the Traffic Costing Service, British Transport Commission Headquarters, as a Traffic Costing Officer. Mr. Long was appointed Senior Traffic Costing Officer, Liverpool Street, in 1953, and was later redesignated Principal Traffic Costing Officer. In addition, he took administrative charge of the Economic Survey Office, Eastern Region, from its inception, in 1957, and was appointed Economic Survey Officer the following year.

Mr. W. R. Peacock, Senior Representative, Cardiff, British Transport Advertising, has been appointed Area Sales Manager, Manchester. He is succeeded in Cardiff by Mr. R. J. L. Miller, Sales Representative, West London Area.

Mr. P. Rees, B.Sc.(Eng.), A.M.I.C.E., Organisation & Methods Assistant, Chief who, Civil Engineer's Department, Western Region, as recorded in our October 28 issue, has been appointed District Engineer, Shrewsbury joined the former Great Western Railway as a pupil under the late Mr. R. Carpmael and Mr. A. S. (now Sir Allan) Quartermaine from 1937 to 1940. For the next six years, he served in the Royal Engineers (Transportation Branch) and attained the rank of Major. After demobilisation he joined the Divisional Engineer's Office at Gloucester, and subsequently held positions at Paddington and Neath. In 1951 he was appointed Personal Assistant to the Chief Engineer and the following year became the Assistant to the District Engineer, Paddington. At the end of 1952 he became Assistant District Engineer, Cardiff and, in 1955, moved to Paddington in a similar capacity. In June, 1959, Mr. Rees was appointed Organisation & Methods Assistant, Chief Civil Engineer's Department, which position he now vacates on taking up his new appointment.

We regret that Mr. A. Earle Edwards, Operating Officer, Southern Region, British Railways, was incorrectly designated Assistant to Operating Officer in the list in our October 28 issue of those who attended the funeral of the late Mr. P. Nunn.

Mr. D. I. Grant, Vice-President, Associated Services, Canadian National Railways, and Mr. H. J. Nevin, Assistant General Sales Manager, Passenger, C.N.R., have retired.

Massey Ferguson Limited has announced the following appointments to the staff of Massey Ferguson (Export) Limited, reference to the formation of which is made on page 551: Mr. W. W. Mawhinney, also a Vice-President of the parent company, to be Managing Director; Mr. W. Reed-Lewis, to be Director (Marketing), and Mr. P. A. V. Spencer to be Director (Sales).

The following senior staff appointments have been announced by B.T.R. Industries Limited: Belting Division: Mr. G. W. Williams to be Southern Area Sales Manager at the Head Office, London, and Mr. G. E. Plows to be Northern Area Sales Manager at Manchester. General Mechanicals Division: Mr. J. Etchells to be Divisional Marketing Manager, Mr. P. M. Hartley to be Sales Manager for transmission belting, vibro-insulators and other bonded rubber-to-metal products; Mr. F. T. Metherell to be Sales Manager for general rubber and plastic

Mr. J. D. C. Churchill
Appointed Planning Officer, Commercial Department, London Transport Executive

Mr. W. J. Evans
General Secretary, Associated Society of Locomotive Engineers & Firemen

Mr. A. Hallworth
General Secretary, Associated Society of Locomotive Engineers & Firemen, 1956-60

products, Mr. W. N. Evans to be Design Services Manager, and Mr. H. N. Adams to be Northern Area Manager, Manchester.

Mr. J. D. C. Churchill, F.S.S., Assistant Secretary, London Transport Executive, who, as recorded in our September 23 issue, has been appointed Planning Officer in the Commercial Department, was educated at Cheltenham College. He joined the Underground Group of Companies in 1929 and served in several departments before he was appointed to the office of the Vice-Chairman, the late Mr. Frank Pick, in 1939. During the 1939-45 war he served in Europe and the Mediterranean, and became a Brigade Major in 1944. In January, 1946, he was appointed to the Chairman's Office, and became Secretary to the Chairman in April, 1947. He became responsible for the work of the Development & Research Office in 1948 and, in 1952, was appointed Planning Officer in that office. His appointment as Assistant Secretary was made in 1955.

Mr. H. P. Barker, Chairman & Managing Director of Parkinson Cowan Limited, has been elected Chairman of the British Institute of Management.

Mr. P. A. Robinson, Chief Engineer, Cumberland Motor Services Limited, has been appointed Chief Engineer of the Thames Valley Traction Co. Ltd., Reading.

Mr. E. A. Yeomans, Secretary & Accountant, of the Trent Motor Traction Co. Ltd., will be retiring on March 31, 1961. Mr. G. F. Harvey, Secretary & Accountant of the City of Oxford Motor Services Limited, has been appointed to succeed him.

Mr. H. Darnell has been appointed Director and General Works Manager of Steel Peech & Tozer Limited in succession to Mr. G. E. D. Halahan, who has been appointed a Director and General Manager of Round Oak Steel Works Limited.

Samuel Osborn & Co. Ltd. has announced the following appointments to the boards of Directors of companies within the group : Mr. A. Hutchinson, Mr. R. F. Horton and Mr. I. G. Buchan, to the board of Samuel Osborn & Co. Ltd.; Mr. J. Williams, and Mr. V. P. Giles, to be Local Directors of the company ; Mr. F. May to be Chairman of the subsidiary board ; Mr. R. Thompson, to the board of Burys & Co. Ltd.; Mr. A. C. Dennis, to the board of the Osborn Foundry & Engineering Co. Ltd.; Mr. F. A. Kirk, to the board of the Titanic Steel Co. Ltd.

Mr. W. J. Evans, General Secretary elect of the Associated Society of Locomotive Engineers & Firemen, who has now taken office, as recorded in our October 7 issue, was born in 1899. He joined the railway service as an engine cleaner in 1916, but served in the Royal Navy from September, 1916, to 1920, when he returned to railway work. He served as a Member of the Executive Committee of A.S.L.E. & F. from 1934 to 1939, and was President of the Executive Committee from 1937 to 1939. He was then appointed Organiser, and acted as Organiser in Birmingham until February, 1956, when he was appointed Assistant General Secretary. In January, 1959, he was elected as General Secretary. Mr. Evans is the editor of *The Locomotive Journal*, the A.S.L.E. & F. monthly publication, and a Member of the General Council of the Trades Union Council.

Mr. C. C. P. Tennant has been appointed a Director of the British Metal Corporation Limited.

Mr. R. Cooke has been appointed Managing Director of the British Crane Co. Ltd.

Mr. D. F. Kershaw has been appointed General Manager of the Canadian Branch of Wolf Electric Tools Limited.

Mr. R. L. E. Keates, Sales Director of Steels Engineering Products Limited, has joined the boards of R. H. Neal & Co. Ltd., and F. Taylor & Sons (Manchester) Ltd.

Mr. W. Kelway-Bamber, M.I.LOCO.E., of W. Kelway-Bamber & Co. Ltd., has been appointed the London Agent for Jones & Foster Limited, brassfounders, of Birmingham.

The following Officers were installed at a meeting of the Court of Assistants of the Worshipful Company of Carmen on Wednesday, October 19. Mr. R. W. Birch as Master; Alderman Sir Frederick M. Wells as Senior Warden; Mr. F. Cumber as Junior Warden.

Mr. A. Hallworth, General Secretary of the Associated Society of Locomotive Engineers & Firemen, who, as recorded in our October 7 issue, has retired from that office, was born in 1898. He served in H.M. Forces throughout the 1914-1918 war, and joined the former L.M.S.R. in 1919, working successively as engine cleaner, fireman and spare driver. He became Organising Secretary of A.S.L.E. & F. in 1938, and Assistant General Secretary in 1948. In February, 1956, he was elected General Secretary. Mr. Hallworth is a Member of the British Trade Union Executive.

We regret to record the death of Mr. T. G. Munro, Sales Manager, Southern Forge Limited.

Mr. J. Skeldon has been appointed Sales Director, J. C. Bamford (Excavators) Limited.

Mr. J. A. Laurence has been appointed to the board of Laurence Scott & Electromotors Limited. He succeeds Mr. Claud Laurence, who has resigned.

Mr. F. Turner has been appointed a Local Director of John Fowler and Co. (Leeds) Ltd.

Mr. H. V. Rowlands has been appointed Sales Director, Burtonwood Engineering Co. Ltd.

Mr. N. A. Slater has been appointed Commercial Manager of the Pollard Ball & Roller Bearing Limited Group of Companies.

Five new directors have been appointed to the board of John B. Pillin Limited. They are: Mr. R. Adams, Mr. I. A. P. Coe, Mr. L. J. Field, Mr. A. F. MacDonald, and Mr. J. W. MacMahon.

Mr. D. L. Bonnell has been appointed Sales Representative of the Hymatic Engineering Co. Ltd. for South Wales, Gloucestershire and Somerset.

Mr. N. J. Fuller has been appointed Assistant Sales Manager of Goodyear Pumps Limited, and Mr. J. C. Reid has been appointed to represent the company in Scotland.

NEW EQUIPMENT AND PROCESSES

Weed-Control Chemicals

IN recent years the chemical industry has developed many new organic compounds as efficient and economic weapons to wage war on unwanted vegetation. Of these, two substituted urea herbicides, Du Pont Telvar monuron and Du Pont Karmex diuron, have properties which are claimed to confer advantages on weedkiller treatments for railway use. These chemicals have been given extensive practical tests in many countries, notably in the United States and Britain. The application techniques described here have been developed on the basis of commercial experience with the object of making possible improvements in the efficiency of railway weed-control programmes and so reducing the cost of good track-maintenance to the absolute minimum.

Monuron and diuron combine a wide spectrum of weed control with unusual residual properties. Their effectiveness over long periods is explained by their extremely low solubility which enables them to resist leaching downwards by rainfall and, by their relative resistance to biological breakdown by soil microbes., In addition they are non-corrosive, non-volatile, non-inflammable, and low in toxic hazard to human and animal life.

Diuron is about one-sixth as soluble as monuron. It is this difference in solubility plus inherent weedkilling power than can establish a preference for one product over the other. Monuron is mostly preferred for initial applications and provides the base for long-lasting residual control in herbicide mixtures. Diuron usually gives best results where the rainfall is high and the weed population mostly annuals. Diuron is therefore preferred in maintenance treatments when deeper-rooted weeds have been removed and the need is to prevent re-establishment from germinating seeds over the longest possible period.

Monuron and diuron enter plants mainly by root absorption and their effects do not become apparent until the chemicals have been carried into the root zone by moisture. For this reason the effects are sometimes slow to appear. The best time of application is usually in late winter or early spring before there is any appreciable growth of vegetation and while there is still adequate rainfall.

Telvar and Kamex weedkillers are monuron and diuron compounds respectively, formulated as wettable powders containing 80 per cent active ingredient. These formulations are designed for spray applications as suspensions in water or other liquids, for example, herbicidal oils. They are also used in mixtures with other herbicides, both for liquid and dry applications.

American Experience

Monuron and diuron have been included in tests conducted by the Association of American Railroads since the early 1950's.

The tests carried out over a six-year period by the Iowa State College which were completed in 1958 should be of greatest interest in the United Kingdom because the vegetation problems and climate are more comparable than in the other test areas. Monuron in mixture with sodium chlorate was the most consistently effective soil-acting treatment for general track-bed vegetation control. Of the various treatments applied over a five-year period only monuron at 10 lb. per acre, plus sodium chlorate at 80 lb. per acre, and monuron at 20 lb. per acre gave full control (over 90 per cent) when applied each year. These treatments were also considered satisfactory when applied in alternate years. With other treatments a late contact treatment of a herbicidal oil was required for full control. Tests in 1957 and 1958 showed that monuron and simazin were equivalent, pound for pound of active ingredient. In 1958 the addition of 100 lb. per acre of sodium chlorate more than doubled the effectiveness of 5 lb. per acre of monuron or simazin and gave a slightly better average control than 10 lb. of the chemicals applied alone. The second 5 lb. of monuron or simazin or the second 100 lb. of chlorate gave only small increases in percentage control.

Tests carried out over a three-year period by the Montana State College in a low rainfall area (18 in. per annum) were completed in 1956. Of the various treatments applied in spring 1954, only those that included substituted ureas gave acceptable vegetation control over three years. High rates, 20 lb. and 40 lb. per acre, were applied. Monuron and diuron at 10 lb. per acre plus dalapon at 20 lb. per acre, applied in the autumn of both 1954 and 1955, gave excellent results, controlling virtually all grasses and broad-leaved weeds. On cinder ballast, autumn treatment in 1954 was not satisfactory. Monuron at 10 lb. per acre applied in the spring of 1956 gave good results but the effectiveness was increased by the addition of sodium chlorate at 80 lb. per acre, dalapon at 10 lb. per acre, or boron trioxide at 320 lb. per acre.

Tests carried out over a five-year period by the University of Florida were completed in 1954. In these tests, monuron and diuron showed more promise of effective vegetation control than any other individual herbicide tested. Results showed that a mixture of 10 lb. per acre each of diuron and dalapon will control effectively most native vegetation for at least one growing season.

A number of general conclusions can be drawn from the results of these tests. Well-balanced mixtures of herbicides are considered to offer definite advantages in both cost and efficiency over single-chemical applications at comparable rates. Track heavily infested with deep-rooted perennial weeds needs heavy initial applications of herbicides but in subsequent years lighter rates can be used to hold remaining perennials in check and prevent the establishment and seeding of annuals.

Mixtures based on monuron or diuron such as those described above have been used successfully by many of the leading railways in the United States of America and Canada for a number of years.

For many years, sodium chlorate, formulated with fire-retarding chemicals has been the most widely used weedkiller on British Railways and many other systems. Sodium chlorate is cheap and it is effective on a wide range of annual and perennial species. It affects plants in several ways; by contact, by translocation, *i.e.*, by movement through the plant, and by root absorption. It is relatively rapid in action and quickly gets rid of top growth. The main disadvantage of sodium chlorate is its lack of residual activity particularly against annual weeds germinating near the soil surface. Being a very soluble compound, it is rapidly leached out of the root zone of plants. In addition it is rapidly decomposed under warm, damp conditions. In many years the dosages used for vegetation control on British Railways, usually about 120 lb. per acre, are not considered to be effective in preventing weed seed germination toward the latter part of the growing season. The effective period may be shorter when heavy rain falls soon after application. Grasses are generally the first species to recolonise; broad-leaved weeds are usually retarded for the whole growing season. On some lengths of track, a second treatment of sodium chlorate is required in the autumn.

United Kingdom Results

Exploratory tests with monuron were started on British Railways as early as 1952 and results during this and subsequent years suggested that the complementary activity of monuron and sodium chlorate provided an improved weedkiller for on-track and off-track use on railways.

In 1956 and 1957 detailed tests were carried out on a neglected stone-ballasted track on British Railways, comparing monuron with sodium chlorate and mixtures of monuron and sodium chlorate sprayed annually. The results of these tests showed that mixtures of Telvar monuron at 3·2 lb. per acre plus sodium chlorate at 30 to 60 lb. per acre gave good weed control throughout the growing season and progressively reduced vegetation to negligible proportions. Sodium chlorate at 120 lb. per acre gave very good weed control initially but regrowth appeared during the summer months and rapidly established

during the autumn. There was no permanent reduction in growth. Telvar monuron at 4·8 and 6·4 lb. per acre gave slow initial control but, after two to three months, control was excellent for the remainder of the growing season. Some regrowth of resistant deep-rooted perennial broad-leaved weeds occurred.

The first large-scale spray train applications of Telvar monuron/sodium chlorate mixtures were made in 1957 with specially modified equipment manufactured by the Chipman Chemical Co. Ltd. The results of the large-scale tests confirmed that these mixtures can provide consistently good season-long control at annual application rates which are competitive in cost with the standard application of sodium chlorate.

Similar mixtures have been used in annual track spraying programmes in various Regions of British Railways since 1958. In most cases the dose rate used was Telvar monuron at 3·2 lb. per acre plus sodium chlorate, in the form of B.R. Specification 625, at 43 lb. per acre. Over three remarkably different growing seasons, and over a wide variety of ballast types, the results were uniformly good. Rapid knockdown of top growth has been combined with long-term residual control over a broad spectrum of weeds.

In 1958 and 1959 Telvar monuron and mixtures of this with sodium chlorate were included in plot tests carried out by the Working Party set up by the British Transport Commission to investigate the use of weedkillers on British Railways. The illustration on page 544 shows, on the right, track which was treated with the mixture in both those years, photographed in May, 1960. The track on the left was not treated with weedkiller in 1959.

Karmex diuron was introduced into the B.T.C. tests in 1959. During 1960, Telvar monuron at 8 lb. per acre, or Karmex diuron at 6·4 and 5 lb. per acre, have been included in extensive commercial applications of newer materials to track in each of the six Regions of British Railways. The results of these tests have not been published.

The introduction of the new organic residual herbicides to railways' spray programmes suggests the need for an entirely new approach to the problem of vegetation control. Where these herbicides are applied their effectiveness as destroyers of germinating weed seedlings may be reduced or lost by hand hoeing. Annual weeds usually germinate from the top inch of soil substrate and raking or hoeing, particularly in the cess, may result in the barrier of chemical formed in the root zone being diluted to the extent that it is no longer completely effective. Mechanical disturbance also stimulates further weed seeds to germinate. Most perennial weeds are not destroyed by hoeing, and in fact, chopping up the underground storage organs often results in the establishment of more plants.

Application Techniques

As weed establishment tends to be greatest in the cess and at the toe of the ballast, recent experience with differential spray rates between track and cess suggests that the cess and toe of the ballast should be sprayed with a higher rate of application as a routine measure. On well-maintained tracks the spraying of the cess only may be preferable to overall spraying of a reduced length of track when the budget is limited. Mixtures of Telvar monuron or Karmex diuron with sodium chlorate are claimed to be ideal for cess spraying because of their effectiveness on deep-rooted perennial weeds combined with long-residual activity on germinating annuals.

Some species of deep-rooted weeds may be only temporarily controlled with spray-train applications of organic residual herbicides or chlorate mixtures. Although infestations of these weeds may be progressively weakened with annual treatments, spot applications of high doses of soil-acting weedkillers are probably a more effective answer.

Advances in application techniques have gone hand in hand with improvements in chemical weed control treatments. Because of their extremely low solubility the weedkillers under discussion, formulated as wettable powders, must be kept in suspension at all times by continuous agitation. Spray trains manufactured by the Chipman Chemical Co. Ltd. are equipped with an efficient agitation system which ensures uniform application of sodium chlorate mixtures incorporating Telvar or Karmex and treatments of the straight components.

These new systems are designed to give efficient spray cover over a wide range of train speeds (5 to 30 m.p.h.) at variable dosage rates which can be applied both evenly and differentially over the track as required.

The spray pattern and width of spray can be varied at will and new wing nozzles have been developed which provide an even application over the cess. As may be seen in the illustration above, the use of retracting booms has been made unnecessary. The volume rate applied with Telvar or Karmex and mixtures can be reduced compared with that normally used in spraying sodium chlorate. This increased flexibility of operation enables the new treatments to be used with the maximum efficiency and economy.

Special Problem of Sidings

Sidings present a special problem because of the difficulties of access and possession of tracks. Recently, dry granular materials based on Telvar monuron have shown great promise of providing a practical solution to this problem. Two of these, Ureabor, a monuron/borate formulation, and Chlorea, a monuron/chlorate/borate formulation, have both been widely used in the United States and in Britain. Both materials can be applied very easily with the lightweight man-borne applicator shown in use in the lower illustration on this page, or a power operated spreader. Sidings can now be treated efficiently without the disturbance of rolling stock. Where the use of mobile trolley equipment is practicable a ready-formulated monuron/chlorate mixture, Atlavar, is available for spray application. The small extra cost of the granular formulations is usually counterbalanced by the savings in application costs. Dry granular applications are also of importance for the treatment of cable runs and for spot treatment of patches of resistant weeds on or near the permanent way.

Further information concerning the range of weedkillers described here may be obtained from the Du Pont Co. (United Kingdom) Ltd., 76, Jermyn Street, London, S.W.1, or from the distributor for railway and industrial use in this country, the Chipman Chemical Co. Ltd., 2, Caxton Street, London, S.W.1, which also can provide full details of the spray and applicator equipment.

REFERENCES

American Railway Engineering Association Bulletins: 528, February, 1956; 535, February, 1957; 542, February, 1958; 549, February, 1959; 556, February, 1960.

Parliamentary Notes

Organisation and Future Development of British Railways

Special committee set up by Minister of Transport; additional to Stedeford Committee: reduction in funds for modernisation

Mr. Ernest Marples, Minister of Transport, announced in a long debate on British Railways in the House of Commons, on October 26, that he had set up a committee under his own chairmanship last summer to consider the size and nature of the railway system needed in Great Britain.

" We hope," he added, " that we shall go with the British Transport Commission into the size and shape of a revised modernisation plan. Meanwhile, it has been necessary to slow down to some extent the rate of investment."

The debate opened on a motion by the Minister that the House take note of the report and accounts of the Commission for 1959 and the report from the Select Committee on Nationalised Industries relating to British Railways: " two basic documents." The one, he said, revealed a difficult financial position. The other was an illuminating and extremely well-written exposition of the problem of the railways.

The Special Advisory Group on the British Transport Commission, under the chairmanship of Sir Ivan Stedeford, had taken evidence from many quarters in the whole field of the Commission's activities, and the scope and contents of its recommendations reflected this.

" We have received a number of recommendations, the final one being just three weeks ago," Mr. Marples explained. " The recommendations cover finance, statutory restrictions, modernisation and reorganisation, which is not a bad harvest for six months' intensive work. As soon as we have formulated our proposals on them, we will issue a White Paper."

The trade unions contributions were interesting and helpful, and if they had second thoughts, or if they had any additional evidence, he would like to receive them either orally or in writing before the Government finally determined its own proposals.

Here the Minister interpolated: " We have to have a railway system. Its shape, size, pattern may alter, but whatever happens we cannot, in this congested island, do without a railway system."

" Deficits in their True Perspective."

The true deficit for the railways, in 1959, was £110 million: £42 million working deficit, £42 million central charges, and £26 million further interest charges. In 1960 the Commission's financial difficulties would be increased by the pay increases—£40 million each year to the wage bill. To help, the Government had given in effect a subsidy of £105 million, the significance of which was that it disguised the extent to which the Commission's other activities, such as the buses, assisted the finances of the railways themselves. Those other activities were expected to produce £10 million net surplus, after paying their share of central charges, including interest. Therefore, the provision made on his vote assumed that the railways would lose about £115 million revenue accounts in 1960.

The Minister made two comparisons to show these losses in their true perspective:

(1) In 1959, gross receipts of the railways were £457 million. The loss was £110 million, almost 25 per cent of the turnover. That meant that to break even the railways would have to increase their gross receipts by nearly one-quarter without any increase at all in expenditure.

(2) In 1959, 519,000 men were employed on the railways and the gross receipts amounted to £457 million. This meant that the gross takings per man per year were only about £880.

" This is a very startling figure," commented Mr. Marples. " It certainly shows that there is every need for efficiency. The British Railway Productivity Council has been looking at what can be done by extension of work study. Both sides agree about the need to intensify efforts in this field and they are issuing a joint-appeal for co-operation from all within the industry. The nation will await results with great interest. The taxpayer is providing a subsidy of £105 million above the line. This is equivalent to 4d. in the £ on income tax. Another way of putting it is that about £200 per year of each railway worker's pay may be regarded as coming direct from the taxpayer."

Modernisation Costs

Referring to the capital cost of modernisation, Mr. Marples said that it was running at the rate of about £160 million a year. In 1961 it would be about £140 million. " There is a curious system of accounting at the moment in the Transport Commission," he added, " which we may look at when the Government makes its proposals. Much of this sum has to be borrowed from the Exchequer. Let us assume that borrowings for the next five years between now and 1965 are at the rate of about £100 million a year. This will increase the interest burden by 1965 by a further £30 million per annum. The only way of meeting additional burdens of this sort, if they are not to remain indefinitely with the taxpayer, is by economies, efficiency and increased revenue."

Against this background the Government must examine the Select Committee conclusion that " there is no doubt that a large-scale British Railways system can be profitable."

White Paper to be Issued

The Select Committee made a searching examination of the fundamental questions, but it left the Minister and the Commission understandably with more questions than answers. He was glad to say, however, that the recommendations from the Special Advisory Group bore to a remarkable degree on those questions and reinforced what the Select Committee had to say.

Mr. Percy Collick (Birkenhead—Lab.): When is the House likely to be in possession of the Stedeford Report ?

Mr. Marples: I am afraid that I shall have to ask the House to wait. I promise that it will be as soon as possible, because I realise that the period of uncertainty must be as short as possible.

Mr. F. Noel-Baker (Swindon—Lab.): Will it be published ?

Mr. Marples: The White Paper certainly will be published.

Mr. Noel-Baker: Not the White Paper, the Stedeford Report.

Mr. Marples: The White Paper will be published. My right hon. friend said so when he made the original statement in the House.

Mr. Marples went on to say that his department started last February its examination of projects and schemes costing more than £250,000. As to the reason why he introduced his control, he stated: " If the railways are to progress towards viability, one of the first steps to be taken is to see that their investment which is necessarily limited by the funds available for the public sector of the economy, is invested in the wisest way. I was neither sure nor satisfied on this point. I was worried by the way in which railway receipts were not only failing to cover costs, but seemed unlikely to show adequate returns on the large amounts of capital being invested in particular projects under the modernisation plan.

Railway Projects Studied by Ministry

" Proposals for investment have been coming in for some months now. This has been of great value to the Department and perhaps also to the Commission in assessing the needs and settling the priorities and so forming a picture of the need for investment in the Commission's undertakings in future.

" Certainly, none of the submissions from the B.T.C. or the advice given by the Special Advisory Group makes me doubt that I acted reasonably in requiring the submission of these projects. A quarter-of-a-million pounds in any context is quite a big figure. But the truth is that most of the proposals that we have been receiving are for far bigger amounts of investment, sometimes running into millions of pounds. Moreover, one railway project can easily affect another. They tend to be complex and inter-related.

" In fact, the railway Regions themselves authorise schemes totalling about £9 million a year which do not even go before the Commission, let alone my Ministry. In any case, some knowledge of major individual projects—and I think that £250,000 is a fair definition of ' major '—is necessary if I am to get a picture of investment as a whole.

" After all, I act as the Commission's banker for most of its investment. I am responsible to this House and to the country for the advances made, and I am responsible through my vote for its deficit. I think that the Select Committee would agree with me when I suggest that few bankers would allow their clients to invest this sort of money without wanting to know more about whether they would pay off. This is particularly so when the client already has a large overdraft. I do not know how long it will be necessary to keep the control, but, frankly, I envisage closer relations in this area between the railways and my Ministry. Much depends on what is decided about the level of investment in the railways generally and their future organisation."

New Study Group's Task

The Minister then went on to relate railway investment to investment in transport generally, and emphasised how road and air traffic had increased at the expense of the railways. That, he said, was the sort of thing about which the Government must take a considered view. It was for that reason that he had set up a study group with himself as Chairman, and on which the Commission was represented and was co-operating in preparing a revised modernised plan. This study group knew the Commission's difficulties: " it has told us its views."

This was an entirely new committee, and it had no relation with the Stedeford Committee. It was going into the whole aspect of travel. It would certainly take any evidence that organised labour with the industry cared to give on this matter. If it had any views to express on the size and shape of the industry, "we shall give it facilities."

While the Government was looking again at the plans for railway modernisation and investment, there was no question of stopping modernisation. The Government was very much concerned at some of the features of the modernisation scheme, notably the increased cost of the present estimates.

Expenditure Fixed for Next Year

A particular case, he went on, was the London Midland Region electrification scheme. The Special Advisory Group, early on, expressed doubts about the economic aspects of the project as it had been explained to it, and the B.T.C. had prepared a reassessment of the scheme in the light of its experience elsewhere as well as in the light of recent development, and "this is under urgent examination by the Ministry." The Commission had agreed, pending the outcome of this examination, not to place new contracts, but there was no question of the cancellation of existing contracts, and work under them had continued.

"Against this background," Mr. Marples stated, "I have needed to review the modernisation plan in fixing investment ceilings for the Commission's undertakings in 1961.

"In particular, the maximum for expenditure on the railways will be £140 million, as compared with about £160 million originally agreed for the current year. For the Commission as a whole, there will be a ceiling of £175 million, as compared with £200 million in 1960. More information about this will be given in the White Paper on investment in the public sector which, I understand, is to be published at the end of the month, but I have the permission of the Chancellor of the Exchequer to inform the House of the figure I have mentioned. . . .

New Measures "Just a Start"

"What we have already done is just a start. Other far-reaching measures are necessary to meet the emergency with which we are faced. . . . This is a sort of technical revolution and we must plan accordingly.

"The impact of the changes in transport," he continued, "will affect our economy and our society and will be felt by the railwaymen who are part of that society. Their morale and well-being are of the utmost importance, and I want it to be quite clear that my proposals will take the fullest account of this. I am well aware that a new deal will need the understanding and active co-operation of all within the industry and that there will be problems which can be solved only by all pulling together.

"There will be no change for the sake of change. I should like to see an end of major measures every seven years or so. The changes we make will be changes for the sake of the community, in the interests of the community as a whole and not of any particular group or interest.

"The problems the Government must solve by its proposals are: (1) Organisation: What is the best organisation for the railways and for the Commission's other undertakings, and for their relationship to one another? (2) Management: What improvements can be made? (3) Modernisation: Do we still pin our faith to modernisation and, if so, how much of the system must be modernised to carry traffic suitable to the railways? (4) Statutory restrictions: Ought the railways to be freed from the restrictions put on them when they had a monopoly? (5) Property: How can the best use be made of the Commission's property? I do not think that it is being made at the moment because of certain restrictions. (6) Are fundamental financial changes required? It has been suggested in many quarters that they are required. (7) How can we achieve viability?"

B.T.C. Plans Bearing Fruit

Mr. Wedgwood Benn (Bristol S.E.—Lab.) said the fruits of modernisation were beginning to be obvious to the ordinary passengers on the railways, and the far-sighted work of the Commission was beginning to bear fruit. He was disheartened that the Minister made no reference to the Chairman of the Commission. His failure to pay tribute to Sir Brian Robertson had, by implication, insulted those who worked under him. He applauded the recommendations of the Select Committee, and emphasised how the restrictions placed on the Commission were responsible for the economic position of the railways. It seemed a great tragedy that they had a Minister who did not really like railways. He drew attention to the editorial comment in *The Railway Gazette* of October 21, in which reference was made to Mr. Marples' speech at Scarborough. It was a very great tragedy that the only statement that the Minister should have made of any significance was that there was to be a cut in the modernisation programme.

Mr. Benn moved an Opposition amendment to the Government's motion regretting the failure of the Government to pursue a consistent national transport policy within which the B.T.C. could operate effectively, and calling upon it to do so forthwith.

Sir Richard Nugent (Guildford—C.) said that one of the difficulties in dealing with the railways was that they had been set against a political background for the past 50 years. It was, therefore, not surprising that if from time to time wrong decisions were taken. The problem of rationalising the Victorian system of the railways was immense. With all the ability and talent there was in the Commission, its members had not been able to go fast enough with rationalisation and cutting out the dead wood.

Mr. Ray Gunter (Southwark—Lab.) said that until they saw what Sir Ivan Stedeford had at the back of his mind, and what the Minister intended to do about his recommendations, "we are in an atmosphere of unreality." He was sick to death of the B.T.C. being kicked around and unable to answer for itself. If any thought was to be given to regionalising the Commission, he hoped the Minister would consult the Minister of Labour before there was any question of the wage structure being altered and being put on a regional basis.

Mr. Leslie Thomas (Canterbury—C.) said the Select Committee report was a severe indictment of the Ministerial approach, including the Treasury, to the problems of this great industry, and his only complaint against the Stedeford Committee was that the Government had been too tardy in setting it up. He would like to see a hiving-off of all the other vast interests which are the responsibility of the B.T.C. and more Regional board responsibility.

Railway Engineers

Mr. Austen Albu (Edmonton—Lab.), as a member of the Select Committee, thanked the House for the reception given to its Report. What frightened him was that witnesses before the Committee showed no awareness at all of the level of professional staff needed for the revolutionary technical changes which were taking place on British Railways. It was a tragedy that the B.T.C. had never recognised the need to pay professional engineers salaries comparable with those paid in British industry. The truth was that our railway system throughout had, in the past—he believed it was changing at last—been dogged by the George Stephenson tradition of mechanical engineering.

Sir Toby Low (Blackpool N.—C.), as Chairman of the Select Committee, said that they could not expect the question of how British Railways can best be run to be properly answered until they had the relationship between the House of Commons and Ministers on the one hand and those who are running the railways on the other. The economic test should be applied, and the right body to do that was the Commission. He would not put it out of account that to start right, there might have to be some writing down of past capital. He would like to see a nationalised industry investment advisory council consisting of financial, industrial and scientific experts and the Trades Union Congress.

British Railways, he added, must remain an integrated system, and for that reason he disagreed with those who said that the new organisation should be a series of Regional boards directly responsible to the Minister. He paid tribute to Sir Brian Robertson, to his great breadth of mind and to the distinction of it, and to the way in which he has handled this very difficult problem of the railways for seven years now.

Railway Deficits in Other Countries

Mr. P. Collick (Birkenhead—Lab.) said that profit was the determining factor. One had only to think of any railway in Europe or the U.S.A. to see that the fact that British Railways had been running at a deficit during this last post-war period was nothing new.

Mr. C. Longbottom (York—C.) said: "The fact is that we are working to get back to the position where not only have these people a pride in their job but a knowledge that they are working in a great industry and in a railway system second to none in the world."

Mr. Arthur Holt (Bolton West—Lib.) said that nothing short of an edict that people should send goods by rail at twice the cost would alter the traffic situation.

Mr. R. Mellish (Bermondsey—Lab.) blamed inflation for much of the Commission's difficulties, and said the T.U.C. report stated that the Government should assume responsibility for the whole of the B.T.C. capital burden, including deficit advances and modernisation capital, and that the B.T.C. should be charged a reasonable rent based on ability to pay, the rent to be subject to periodic revision in the light of changing circumstances.

Mr. John Hay, Joint Parliamentary Secretary to the Ministry of Transport, said: "Today electronics and computers make simple the task which previously had to be carried out by a building full of clerks, and an operation which might perhaps have taken a day or more can nowadays be done within a few seconds. We seek an efficient, a modern and a viable railway and transport system, flexible, forward-looking and vigorous, which gives good service to the public and—this is vitally important—a good living to those who work in it. This is one of our constant anxieties and pre-occupations.

"I do not deny that the problems we have to face are grave. The task which is before us is daunting in its complexity and magnitude. It presents us on this side, and my right hon. friend in particular, with a challenge, but I do not think that it can be beyond the wit of the British people in the middle of the twentieth century, with co-operation and with common sense, to find a solution. I assure the House that a solution we shall find."

The Opposition amendment was rejected by 296 votes to 240.

Locomotive Engineers' Visit to Barrow-in-Furness

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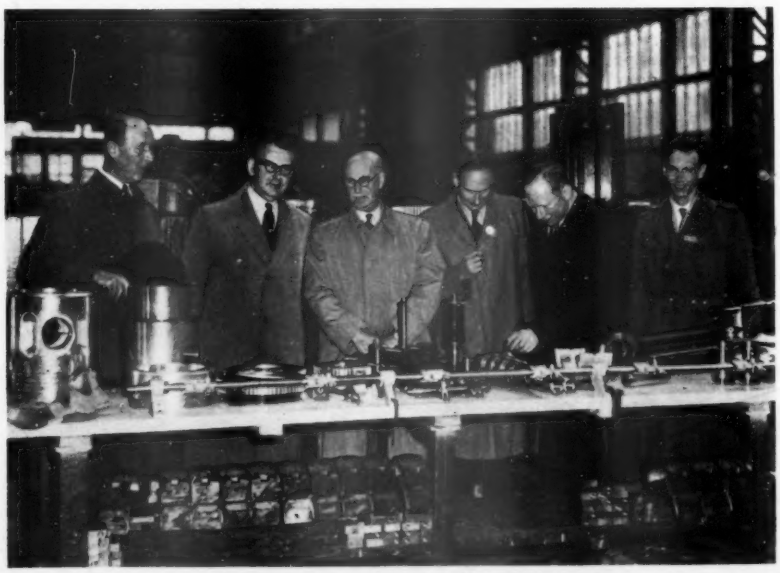

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Railway wheel manufacture shown as example of specialised production techniques in steel

The complete manufacture of monobloc steel railway wheels at the rate of one a minute for British Railways 20-ton goods wagons, and their final assembly into pairs, was witnessed last week by King Mahendra and Queen Ratna of Nepal when they visited the works of Taylor Bros. & Co. Ltd., Trafford Park, Manchester. The royal party, numbering 16 and including members of the Nepalese government and their wives, was accompanied by the Earl of Derby. Their host was Mr. W. D. Pugh, Chairman of the company, whose guests also included Lord Rusholme, Member of the London Midland Area Board, British Transport Commission, and Mr. A. E. Robson, Chief Mechanical & Electrical Engineer, British Railways, London Midland Region.

Largest Specialised Plant

The plant was selected in response to the King's request to see specialist steel manufacture in progress ; it is in fact the largest in the British Commonwealth specialising in the manufacture of rolled-steel tyres, wheels, and forged axles for railway rolling stock. The steel melting department is capable of producing about 200,000 tons a year and the wheel forge about 4,500 pieces a week.

Preliminary operations seen during the tour of inspection included ingot nicking and parting; weighing on an Avery block weigher incorporated in the automatic conveyor system; and charging and discharging the Salem 69-ft. dia. rotary-hearth furnace which re-heats and soaks the weighed blocks at about 1,300°C. under electronic control. Following a hydraulic descaling operation carried out during movement in a transfer bogie, the blocks were seen being fed individually into a Vickers Armstrong 8,500-ton press, first for slabbing between flattening tools and then for forging with dies to finish the hub with partially formed bore and to displace metal to the rim.

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Wheel-Pair Assembly

Axle forging and machining on hydraulically-controlled copying lathes in the same works is co-ordinated with wheel production to enable assembled pairs to be despatched ready for use and complete with roller-bearing axleboxes too when these are called for. The pairs are assembled to fine limits by a hydraulic press of 200 tons capacity, the use of which does not require the pair to be reversed. This press was designed and made in the works; it assembles about 100 pairs a day.

Representatives of Taylor Bros. & Co. Ltd., present included Mr. C. H. Dunt, Assistant Managing Director, and Messrs. J. P. Bennett, J. Cartwright, and A. Y. Johnson, Directors. Because of a business engagement in Canada, Mr. R. G. H. Taylor Managing Director, and Mr. F. S. Beale, Director, were unable to be present.

Staff & Labour Matters

London Transport Busmen's Wages

On October 27, delegates of the London Transport bus drivers and conductors decided to accept the management's offer of an increase in their basic wage of 18s. a week. The men will also receive extra payments for commencing work before 6 a.m. or finishing after 10 p.m. and certain additional payments in respect of overtime and Saturday and Sunday working. The agreement applies to all London Transport bus crews, including Green Line, country and trolleybus services.

Institute of Transport Anniversary Luncheon

Mr. K. W. C. Grand, President of the Institute of Transport and Member of the British Transport Commission, took the chair at the Institute Anniversary Luncheon at the Connaught Rooms, London, W.C.2, on November 1.

After the Loyal Toast, Mr. Grand proposed that of the Institute's guests. He welcomed the former Minister of Transport, Mr. John Boyd Carpenter and the present Minister, Mr. Ernest Marples, and his Parliamentary Secretaries, Mr. John Hay and Lord Chesham, also the Permanent Secretary of the Ministry of Transport, Sir James Dunnett,

Introducing Lord Tenby, Mr. Grand said that when he himself had been an officer of the former Great Western Railway, and Lord Tenby had been in office (he had found him a most accommodating Home Secretary) —Lord Tenby had shown great interest in Welsh affairs. He had made a great contribution in many fields of national effort.

Lord Tenby, in his reply, thanked the Institute for the honour done to him. His remarks are the subject of editorial comment on page 525.

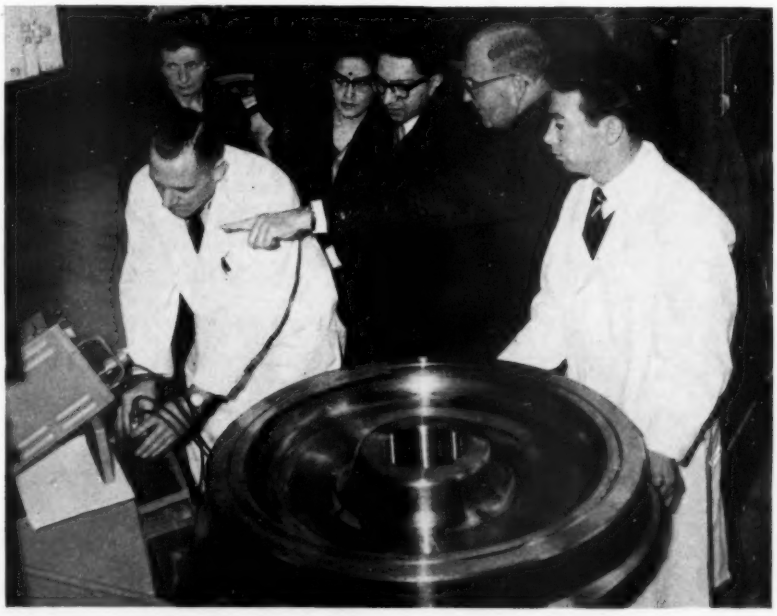
I.R.S.E. Annual Dinner

Mr. L. C. Hawkins, Member of London Transport Executive, proposing the toast of the Institution of Railway Signal Engineers at its annual dinner on October 28, said that the Institution had been in existence since 1912. Its expansion had been collateral with the enormous development in railway signalling and telecommunications.

The route mileage of what were now London Transport railways had also grown very considerably, and while these extensions had provided people living in outer London and the suburbs with greatly improved transport facilities, the increased traffic still had to be carried by the original lines in central London, to which no additional tracks had been added. This had necessitated the provision of means whereby a highly concentrated service of trains could be maintained during the peak periods.

The signal engineer, he added, had been responsible for developing techniques which enabled trains to follow each other in safety and with the minimum possible headway.

Mr. W. Owen, President, said that with the growth of the Institution their constant endeavour was to ensure that the younger members received adequate training.



Ultrasonic testing being demonstrated to the King and Queen of Nepal at the works of Taylor Bros. & Co. Ltd.

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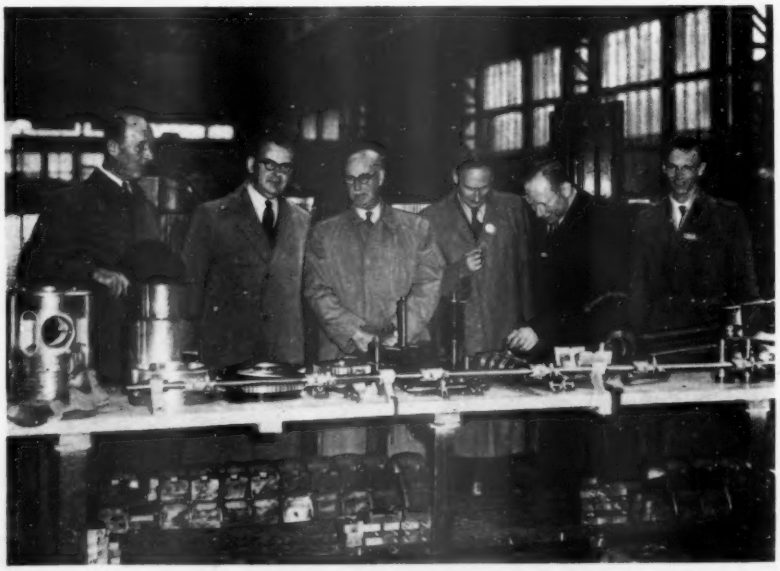

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Another batch of monobloc wheel forgings was seen, after cooling and inspection, being machined on batteries of Webster-Bennett and Craven wheel lathes. Each of 10 Craven machines installed in recent years is powered by a 75-h.p. motor and has a profiling attachment for the machining of flanges. Much interest was shown in the use of a Kelvin & Hughes Mk. 5 flaw detector being used for the ultrasonic testing of wheels and rims. In the illustration, the King and Queen, accompanied by Mr. and Mrs. Pugh, are being given a demonstration on a testpiece with this machine. Equipment is installed also for the magnetic method of crack detection, particularly on wheel centres.

Wheel-Pair Assembly

Axle forging and machining on hydraulically-controlled copying lathes in the same works is co-ordinated with wheel production to enable assembled pairs to be despatched ready for use and complete with roller-bearing axleboxes too when these are called for. The pairs are assembled to fine limits by a hydraulic press of 200 tons capacity, the use of which does not require the pair to be reversed. This press was designed and made in the works; it assembles about 100 pairs a day.

Representatives of Taylor Bros. & Co. Ltd., present included Mr. C. H. Dunt, Assistant Managing Director, and Messrs. J. P. Bennett, J. Cartwright, and A. Y. Johnson, Directors. Because of a business engagement in Canada, Mr. R. G. H. Taylor Managing Director, and Mr. F. S. Beale, Director, were unable to be present.

Staff & Labour Matters

London Transport Busmen's Wages

On October 27, delegates of the London Transport bus drivers and conductors decided to accept the management's offer of an increase in their basic wage of 18s. a week. The men will also receive extra payments for commencing work before 6 a.m. or finishing after 10 p.m. and certain additional payments in respect of overtime and Saturday and Sunday working. The agreement applies to all London Transport bus crews, including Green Line, country and trolleybus services.

Institute of Transport Anniversary Luncheon

Mr. K. W. C. Grand, President of the Institute of Transport and Member of the British Transport Commission, took the chair at the Institute Anniversary Luncheon at the Connaught Rooms, London, W.C.2, on November 1.

After the Loyal Toast, Mr. Grand proposed that of the Institute's guests. He welcomed the former Minister of Transport, Mr. John Boyd Carpenter and the present Minister, Mr. Ernest Marples, and his Parliamentary Secretaries, Mr. John Hay and Lord Chesham, also the Permanent Secretary of the Ministry of Transport, Sir James Dunnett,

Introducing Lord Tenby, Mr. Grand said that when he himself had been an officer of the former Great Western Railway, and Lord Tenby had been in office (he had found him a most accommodating Home Secretary) —Lord Tenby had shown great interest in Welsh affairs. He had made a great contribution in many fields of national effort.

Lord Tenby, in his reply, thanked the Institute for the honour done to him. His remarks are the subject of editorial comment on page 525.

I.R.S.E. Annual Dinner

Mr. L. C. Hawkins, Member of London Transport Executive, proposing the toast of the Institution of Railway Signal Engineers at its annual dinner on October 28, said that the Institution had been in existence since 1912. Its expansion had been collateral with the enormous development in railway signalling and telecommunications.

The route mileage of what were now London Transport railways had also grown very considerably, and while these extensions had provided people living in outer London and the suburbs with greatly improved transport facilities, the increased traffic still had to be carried by the original lines in central London, to which no additional tracks had been added. This had necessitated the provision of means whereby a highly concentrated service of trains could be maintained during the peak periods.

The signal engineer, he added, had been responsible for developing techniques which enabled trains to follow each other in safety and with the minimum possible headway.

Mr. W. Owen, President, said that with the growth of the Institution their constant endeavour was to ensure that the younger members received adequate training.

Ultrasonic testing being demonstrated to the King and Queen of Nepal at the works of Taylor Bros. & Co. Ltd.

Contracts and Tenders

Diesel locomotives and power equipment for British Railways

The British Transport Commission recently concluded contracts for another 50 main-line diesel locomotives, and 98 more sets of engines and transmissions to equip diesel shunting locomotives which are being erected in British Railways workshops at Darlington and Horwich. All the main-line locomotives and 41 of the shunters are for the Western Region. The London Midland Region will have 40 of the remaining shunting locomotives, the Eastern Region seven, the Scottish Region four, and the Southern Region six. The total value of the orders is about £5,500,000.

The 50 main-line locomotives, which will have 1,700-h.p. diesel engines and hydraulic transmission incorporating gearboxes and oil-operated torque converters, are an extension of an earlier order for 45 locomotives of the same type. The total of 95 locomotives is for further stages of the Western Region schemes for the complete replacement of steam by diesel power in the Bristol area, the West of England (west of Newton Abbot), and in South Wales, including all the principal passenger, parcels and freight services, and many other trains between these areas and Paddington. About 1,100 steam engines are to be replaced by some 500 main-line diesel locomotives under these schemes. Deliveries of the 95 main-line locomotives will begin next year and will be completed in 1963. The 98 sets of shunting locomotive equipment comprise 350-h.p. diesel engines and electric transmissions, in which the engine is coupled to an electric generator to provide power for the electric traction motor driving the axles. The railway workshops at Horwich will build 63 of the locomotives and 35 are to be erected at Darlington. British Railways diesel shunting fleet now totals some 1,600 locomotives of which about 1,150 are of the 350-h.p. type.

The details of the orders are as follow:—

Beyer Peacock (Hymek) Limited: 50 1,700-h.p. main-line diesel-hydraulic locomotives with Maybach MD. 870 engines and Mekydro transmissions.

English Electric Co. Ltd.: 98 sets of power equipments for 350-h.p. diesel-electric shunting-locomotives.

The Tunisian Railways has ordered from Klöckner-Humboldt-Deutz (Westwaggon Werke) 28 sets of Minden-Deutz bogies, 21 sets to replace existing bogies in the Decauville diesel railcars and seven sets to replace existing bogies in railcar-trailers.

British Railways, Eastern Region, has placed the following contracts :

Thomas Fletcher and Co. Ltd. : reconstruction of overbridge No. 5, between Sedgebrook (closed) and Barkston Junction

James Bratton & Co. Ltd. : station improvements at Cleethorpes

Duramin Engineering Co. Ltd. : supply and delivery to site of six bulk flour containers

A. E. Symes Limited: alterations to booking hall at Shenfield Station

Standard Telephones & Cables Limited: supply and installation of plain and corrugated sheathed telecommunications cables between Chelmsford and Colchester.

Brightside Heating & Engineering Co. Ltd. : supply delivery and installation of boiler plant, heating systems, oil storage equipment and piping in the Technical Stores, Doncaster.

British Railways, Western Region, has placed the following contracts :—

Abell & Smith's Electrical Co. Ltd.: supply, installation, testing, connecting and setting to work of electric lighting facilities, at Droitwich Station and yard, and at Cheltenham Malvern Road Station, and running and maintenance depot

Clough, Smith & Co. Ltd. : supply, installation, testing and connecting and setting to work of the electric lighting facilities, at Handsworth & Smethwick Station, goods depot and yard

Drake & Gorham (Contractors) Limited: supply, installation, testing, connecting and setting to work of electric lighting facilities, at Newport Ebbw Junction running and maintenance depot and yard

John Morgan (Builders) Limited: erection of the superstructure of a new power signalbox, temporary boiler house, oil storage tank base, sub-station, and cycle store at Port Talbot Station

Fairfield Shipbuilding & Engineering Co. Ltd. : carrying out repairs to the main and cross girders of Crumlin viaduct

John Morgan (Builders) Limited: construction of a signalbox at Waterloo Loop, Newport; of a ground frame at Undy, and of relay house at Marshfield, and construction of various buildings and ancillary work for the District Engineer's new depot at Bristol Ashton Gate.

Ericsson Telephones Limited: provision and installation of an automatic private telephone branch exchange at Marland House, Cardiff

Severn Construction Co. Ltd.: carrying out repairs to the bridges at Swindon Stratton Park Dauntsey, Chippenham, and Bath Green Park

Henry Williams Limited: setting out, supply and installation of signalling control and train describer panels at Reading and Slough signalboxes

A. N. Coles (Contractors) Limited : carrying out improvements at Paignton Station

E. H. & L. Wells : erection of an office and amenity building for the District Engineer at Cattle Pen Site, Reading.

British Railways, North Eastern Region, has placed the following contracts:—

W. Spencer & Sons Ltd.: adaptation of station buildings and the erection of a timber hut at Leeds Central Station for the District Signal Assistant

F. Hardwick Limited: demolition of roofs and buildings at Holbeck High Level Station and the demolition of the up platform at Holbeck Low Level Station

R. Townson Limited : erection of an additional relay room at Huddersfield.

Firth Blakeley Sons & Co. Ltd.: supply and fabrication of signal gantries

J. W. Roberts Limited: application of sprayed limpet asbestos to certain components of Enfield electric coaches under construction at York Carriage Works

I.T.D. Limited : supply of six 1-ton battery operated platform trucks and ancillary equipment for use at Bradford Valley Goods Depot

Pavior Construction Co. Ltd.: road works at bridge No. 33 carrying the Ings Junction to Leeds Central Branch over Crow Nest Lane, Beeston

Weldall & Assembly Limited : supply and erection of one set of fabricated mild-steel bulk storage hoppers at York Central Concrete Depot

Tarslag Limited: supply of pre-stressed bridge beams for the new up yard at Newport

Ruddock & Meighan Limited: reconstruction of superstructure of bridge No. 39 carrying the Ings Junction to Leeds Central Branch over the Leeds to Huddersfield line

F. & J. Watkinson : demolition of station buildings at Milford

Craven Bros. (Manchester) Ltd. : provision of a wheel lathe for use at Shildon Wagon Works

Hunslet Engine Co. Ltd. : provision of a rail-mounted drainage trencher

Tarslag Limited : provision of pre-cast concrete units for bridge No. 3 carrying the Tyne Dock Bottom Branch over Jarrow Road at South Shields

Clough, Smith & Co. Ltd. : provision and installation of electrical wiring in connection with the modernisation of Goods facilities at Bradford Valley Goods Station

I.T.D. Limited : provision of a fork-lift truck and accessories for use at Bradford Valley Goods Station

Pirelli General Cable Works Limited : provision and erection of 11 steel flood-lighting towers in connection with the modernisation of the up yard at Dringhouses, York

T. W. Broadbent Limited : lighting installation works for the Signal Engineer at Leeds Central Station Offices

Wakefield-Dick Industrial Oils Limited : provision of two mobile stillages for lubricating diesel locomotives at Holbeck (Leeds) Motive Power Depot.

The Export Services Branch, Board of Trade, has received calls for tenders as follow :—

From Rhodesia :

1 combined heavy duty rail sawing and drilling machine, required to saw square to length of rail in 80-lb. and 91-lb. section, and to drill simultaneously four holes $1\frac{1}{4}$ in. or $1\frac{3}{16}$ in . dia. through the rail. Complete with electrics for 380 V. 3-phase, 50 cycles, a.c. supply as per specification.

The issuing authority is the Secretary, Rhodesia Railways Tender Board, P.O. Box 1577, Bulawayo, to whom bids should be sent. The tender No. is T.B. 404. The closing date is November 21, 1960. The Board of Trade reference is ESB/27893/60.

From Burma :

15 engineering motor coaches, metre gauge

1 air-cooled, diesel engine, rated 37.5 h.p. at 15,000 r.p.m. with close fitting bonnet suitably insulated underneath to prevent heat in the cab and cowling, bolted on to the purpose of extracting hot exhaust air from the cooling system to outside the vehicle; oil bath type air cleaner ; alarm device to indicate engine overheating and "V" bolt breakage ; electric self-starting with emergency handle.

The issuing authority is the Controller of Stores, Burma Railways, Botataung, Rangoon, to whom bids should be sent. The tender No. is 20/20/B.S.O. The closing date is December 15, 1960. The Board of Trade reference is ESB/27819/60.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

Notes and News

Kofler Train Control System.—Industrial Services Group Limited, of East Grinstead, Sussex, has agreed to form a holding company for the Kofler train control system. The manufacturing rights for the locomotive equipment are held by Gresham & Craven Limited.

Babcock & Wilcox Limited Interim Dividend.—For the year 1960 the directors of Babcock & Wilcox Limited recommend an interim ordinary dividend of 4½ per cent, the same as for 1959. Last year's interim dividend was followed by a final payment of a similar amount.

Tanker Collides with River Severn Rail Bridge.—A tanker loaded with 400 tons of petrol struck a railway bridge over the River Severn on October 25 and blew up, demolishing a span of the bridge. The bridge is three-quarters-of-a-mile long and connects Berkeley Road with Lydney in the Forest of Dean. The tanker was going up the Severn to dock at Sharpness. It is believed to have overshot the dock in the fog and then collided with the bridge.

Southern Railway Dramatic Society Production.—On November 22 the Southern Railway Dramatic Society is presenting a production of "This Happy Breed," by Noel Coward, at the Scala Theatre, London. The production marks the twenty-first year of the society. Ticket order forms may be obtained from Miss P. Brain, Box Office Manager, at the General Manager's Office, Waterloo Station. Reduced prices are obtainable for parties.

Withdrawal of Passenger Service Between Macclesfield Hibel Road and Uttoxeter.—The passenger service between Macclesfield Hibel Road and Uttoxeter via Leek in the London Midland Region, British Railways, is to be withdrawn from November 7. A restricted workmen's passenger service will continue to operate between Leek and Uttoxeter serving intermediate stations. The following stations will be closed to passenger, and parcels traffic: Bosley, Rushton, Cliffe Park Halt, and Rudyard Lake. The area is served by buses. Parcels traffic for Bosley will be dealt with at Macclesfield, and that for the other stations, at Leek. Freight facilities at Rushton and Rudyard Lake will also be withdrawn, and traffic dealt with at Leek. Consall Station will be closed for parcels traffic which will be dealt with at Kingsley and Froghall.

Presentation to Mr. R. L. E. Lawrence.—The Divisional Traffic Manager, London, London Midland Region, British Railways, since 1958, Mr. R. L. E. Lawrence, has been appointed Line Traffic Manager, Midland, L.M. Region, as recorded in our September 9 issue. To mark his departure from Royal London House, Headquarters of the London Division, he was presented recently with a pair of silver tankards. The illustration shows Mr. R. Tildesley (left), Assistant Divisional Traffic Manager, making the presentation.

Railway Queen's Visit to Woking.—Miss Sheila Riordan, Britain's Railway Queen, on October 29 visited Woking on the occasion of "Eastleigh Day" when the railwaymen and their families of Eastleigh pay their annual visit to the Southern Railway Homes for Children and Old Folk. Miss Riodan was met at the station by Mr. A. G. Evershed, Secretary & Superintendent of the Homes, and joined Mr. M. S. Hatchell, Chief Mechanical Engineer (Workshops), Eastleigh, for a conducted tour of the homes. Tea was taken with the Eastleigh Committee and officers of the homes, and attended by Mr. J. E. Binks, Member of the Southern Area Board, B.T.C., and by the Mayor of Eastleigh, Councillor Mrs. S. K. E. Stallard, and over 200 railwaymen and their families. The proceeds of the efforts organised during the past year by railwaymen at Eastleigh for the upkeep of the homes were then presented to Mr. Evershed by Mr. Hatchell in the form of a cheque for the record sum of £1,600. After a performance by the Southern Region Dramatic Society of a Victorian melodrama, Miss Riordan returned to London.

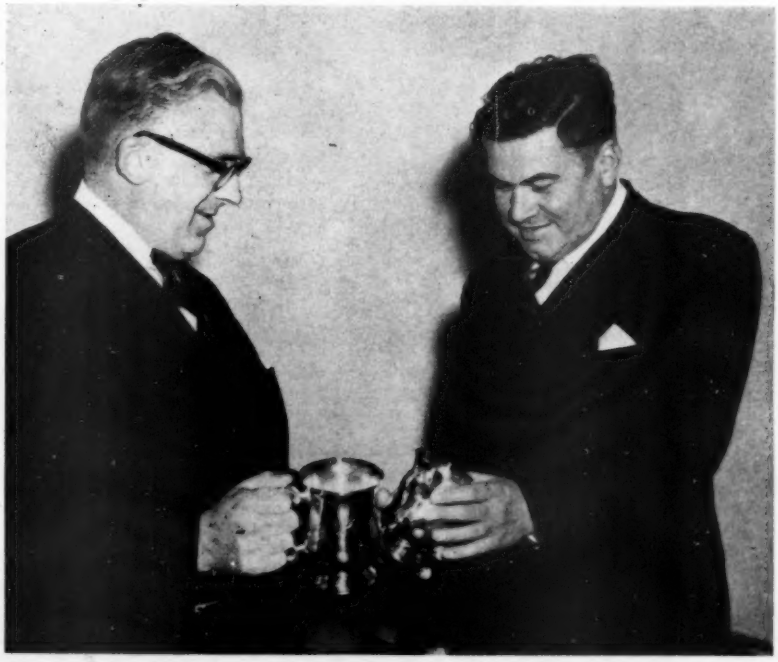
North British Locomotive Co. Ltd. Loss Reduced.—The North British Locomotive Co. Ltd. trading loss for the 28 weeks to July 29, 1960, was £41,692 on invoiced sales of £4,000,000 compared with a loss of £190,827 for the corresponding 28 weeks of last year on £2,700,000 sales. This improvement in results is attributed to the introduction of works method and to economies effected, rather than to a larger volume of despatches.

L.M. Region Sales Training Courses.—Mr. R. L. E. Lawrence lately London Divisional Manager, London Midland Region, British Railways, recently instituted special sales training courses in his Division. These are held at the British Railways Training School at the Grove, Watford, and last a week. Besides regular instructors, senior Regional officers present papers covering the work of their departments and take part in discussion groups. Representatives of trading and industrial concerns give the customers' viewpoint of the service that is required. The first course, covering freight sales, was followed by one on passenger and parcels work.

New Massey-Ferguson Limited International Export Organisation.—The establishment of a central export organisation to co-ordinate and stimulate the expanding export activities of Massey-Ferguson Limited is announced. The new organisation, which will be known as Massey-Ferguson (Export) Limited, will provide a fully integrated export team to promote and support all international sales. The development follows changes in the international management structure of the company at the end of last year, when separate Operations Units were established in Australia, France, Germany, North America and the United Kingdom under a central management group of the parent company. Each of these Operations Units are producing companies. The staff of Massey-Ferguson (Export) Limited, reference to which is made in our personal columns, will be based at Coventry.

More Coal Moved by British Railways.—More coal is being carried by British Railways at this period than that of last year. About 700,000 tons more left the pits by rail during the six weeks ended October 16 than in the corresponding period of 1959. Colliery despatches have been increasing steadily and 691,727 wagons loads, over 22,000 more than a year ago, were carried in the last three full weeks in September. An even greater number was moved in the three weeks ended October 16, when 744,074 wagon loads, nearly 30,000 more than in the same weeks of last year, were cleared from the pits. The number of wagon loads of coal carried by rail between September 4 and October 16 totalled no less than 1,435,801, of which 256,712 loads, or 12,897 more than in 1959, were moved during the last week of the period.

Rolls-Royce Limited Interim Dividend.—The board of Directors of Rolls-Royce Limited has resolved to pay an interim dividend in respect of the year ending December 31, 1960, to holders of £18,580,000 ordinary stock and £1,398,802 workers' (1955) stock registered on the books of the company at the close of business on November 2, 1960, of 2½ per cent, less income tax, to be due and payable on December 13, 1960; and also an apportioned interim dividend at the rate of 2½ per cent per annum in respect of the year ending December 31, 1960, to the holders of workers' (1955) shares which were partly paid up during the year, including workers'



Presentation to Mr. R. L. E. Lawrence on his departure from London Divisional headquarters, London Midland Region

(1955) shares which are to be allotted on November 2, 1960, in pursuance of a current offer of the shares to employees. The total revenue for the first half of 1960 amounted to £51 million (1959, £44 million), and this trend will be reflected on the figures for the whole year (1959, £97 million). The benefits of this increased turnover will to some extent be offset by increased expenditure on research and development.

B.E.T. Omnibus Services Limited Dividend.—B.E.T. Omnibus Services Limited proposes to make a one-for-two scrip issue. On the increased capital the board hopes to maintain effectively the total ordinary dividend at 8 per cent, tax free. A start to this is to be made in the interim dividend, which the board has forecast at 3 per cent tax free, payable on December 1.

Dorman Long (Steel) Limited Expansion Plan.—Dorman Long (Steel) Limited has announced a new development programme, costing £36,000,000, to modernise many of its rolling mill facilities. This is additional to the £7,000,000 expenditure announced in July. Taken together, the two programmes will raise the company's steel ingot production from the present 2,300,000 tons a year to 3,000,000 tons. The first part of the new scheme, costing about £24,000,000, has already been sanctioned by the Iron & Steel Board and work will commence within the next 18 months.

Forthcoming Meetings

November 4 (*Fri.*).—The Railway Correspondence & Travel Society, Scottish Branch, at Charlotte Square, Edinburgh, at 7.30 p.m. Film show by Mr. W. A. Camwell.

November 4 (*Fri.*).—The Railway Club, at the Royal Scottish Corporation, Fetter Lane, London, E.C.4, at 7 p.m. "Some Interesting Continental Locomotives."—Dr. P. Ransome-Wallis.

November 5 (*Sat.*).—Institute of Traffic Administration, Preston Branch, at the Royal Oak Hotel, Chorley, at 7.30 p.m. Annual Dinner.

November 7 (*Mon.*).—The Institution of Mechanical Engineers, Newcastle Branch, at 6 p.m. "Economic Distribution of Steam," Mr. J. A. Robins.

November 7 (*Mon.*).—The Institute of Transport, Darlington Group, at United House, Grange Road, Darlington, at 7 p.m. "The British Transport Commission Legal Service,"—Mr. B. H. Clegg.

November 8 (*Tue.*).—British Railways Bristol Lecture & Debating Society, at the Staff Association, Temple Meads Station, Bristol, at 6 p.m. "The Bus Industry and how best it can be integrated with Rail Services," Mr. I. R. Patey.

November 8 (*Tue.*).—The Institution of Civil Engineers, at Great George Street, London, S.W.1, at 5.30 p.m. "Some Contributions from Nuclear Power to Engineering Practice," Mr. I. Davidson.

November 8 (*Tue.*).—The Railway Correspondence & Travel Society, East Midlands Branch, at Thurland Hall, Nottingham, at 7.30 p.m. "Almost a Century of Great Eastern," Dr. E. F. Youell.

November 9 (*Wed.*).—Institution of Railway Signal Engineers, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. "Development & Application of New Signalling Layouts in Germany," Dipl. Ing. K. F. Kümmell.

November 10 (*Thu.*).—London Midland Region Lecture & Debating Society, at Friends' House, Euston Road, N.W.1. "The Future of Transport,"—Sir Reginald Wilson.

November 10 (*Thu.*).—The Institution of Civil Engineers, Great George Street, London, S.W.1, at 5.30 p.m. "The Economics of Airlifts for Major Construction,"—Informal discussion.

November 10 (*Thu.*).—Railway Travel & Correspondence Society, Bristol Branch, at Grosvenor Hotel, Bristol, at 7.15 p.m. Recordings and slides presented by Mr. J. Allen, Mr. H. J. Freeth and Mr. R. Griffiths.

November 11 (*Fri.*).—The Institute of Transport, Swindon Group, at the Engineering Society, Swindon, at 7.15 p.m. "Continental Container Services,"—Mr. Hudson-Efford.

November 11 (*Fri.*).—The Institute of Transport, East Midlands Section, at Grand Hotel, Leicester, at 6.45 p.m. Annual dinner.

November 11 (*Fri.*)—The Institute of Transport, Merseyside Section, Liverpool, at Adelphi Hotel, at 7 p.m. Annual dinner and visit of President.

November 12 (*Sat.*).—The Railway Correspondence & Travel Society, Great Eastern Suburban Rail Tour.

November 12 (*Sat.*).—The Railway Correspondence & Travel Society, Sussex & Kent Branch, at the Railway Hotel, Brighton, at 7 p.m. "And Now the L.M.S."—Dr. A. F. Cook.

November 12-13 (*Sat.-Sun.*).—Southern Region Lecture & Debating Society. Tour of new signalling layout at Newcastle, York Railway Museum, York signalbox and control.

Railway Stock Market

Uncertainty has prevailed in stock markets once again. Buyers have been holding off, awaiting the outcome of the American presidential election which, by influencing Wall Street, could have an important effect on the London and other markets. Reduction in the bank rate from 6 to 5½ per cent helped British Funds to some extent, but had no appreciable influence on industrial shares, because the Chancellor of the Exchequer, Mr. Selwyn Lloyd, has warned that the lower bank rate was not a first step in ending the credit squeeze, but was decided on for external reasons only. Our money rates have been much above those in New York and other centres, and by attracting "hot" money from the U.S. have been a factor in the weakness of the dollar and the recent big advance in the price of gold on the London market.

The outstanding feature in otherwise inactive foreign rails was provided by Antofagasta stocks, which responded to the surprise news that dividends on the ordinary stock are being resumed with 2 per cent, the first payment for two years. There is also a further 2½ per cent payment on the preference stock. As a result, compared with a week ago, the ordinary stock has risen from 12½ to 16, and the preference from 31½ to 35¼. The 4 per cent perpetual debentures were quoted at 49½.

Chilean Northern first debentures were 54½, Guayaquil & Quito assented bonds 68½, while Brazil Rail bonds eased from 5½ to 5. Costa Rica Railway ordinary stock changed hands at 37½ and the 6½ per cent second debentures at 110. Paraguay Central prior debentures again had a quotation of 15.

Elsewhere, International of Central America common shares were $28½ and the preferred $101¼. Quotations for United of Havana consolidated and second income stocks remained at 1 and 6 respectively. San Paulo Railway 3s. units were again quoted at 1s. Mexican Central "A" bearer debentures were 59½.

Canadian Pacifics receded further, reflecting Wall Street, and at $37 were at the lowest for the year, showing an attractive yield of over 7 per cent. The preference stock was 62½ and the 4 per cent debentures 63⅛, and White Pass shares became easier at $10¾.

Nyasaland Railways shares were 9s. and the 3½ per cent debentures 44½, while Midland Railway of Western Australia ordinary stock marked 7¼.

West of India Portuguese capital stock was dealt in at 109½. Barsi Light Railway stock was quoted at 17½.

Despite the news of the British Transport Commission contract, Beyer Peacock 5s. shares have eased to 7s. 4¼d., compared with 7s. 7½d. a week ago. Charles Roberts 5s. shares were 8s. 9d., compared with 9s., and Westinghouse Brake came back from 44s. 3d. to 42s. 6d. Birmingham Wagon reacted to 31s. and in other directions, North British Locomotive, which remained under the influence of the earnings statement, were 6s. 6d. Gloucester Wagon 10s. shares were 11s., and Wagon Repairs 5s. shares came back to 16s. 9d.

Associated Electrical firmed up to 47s. 9d., English Electric eased to 35s. 6d., and General Electric to 34s. 9d. Crompton Parkinson 5s. shares were 11s. 1½d., B.I. Cables 49s. 6d., Johnson & Phillips 18s. 6d., and Mather & Platt steady at 48s. 6d. Stone-Platt at 61s. 9d. have not held best prices. Elsewhere, British Oxygen 5s. shares were 26s. 9d. and Tube Investments 83s. 9d. A little profit-taking following the results put Ransom & Marles 5s. shares back to 26s. 9d. Pollard Bearing 4s. shares were 50s., and Pressed Steel 5s. shares 27s. Hadfields at 24s. 3d. were a good feature in steels.

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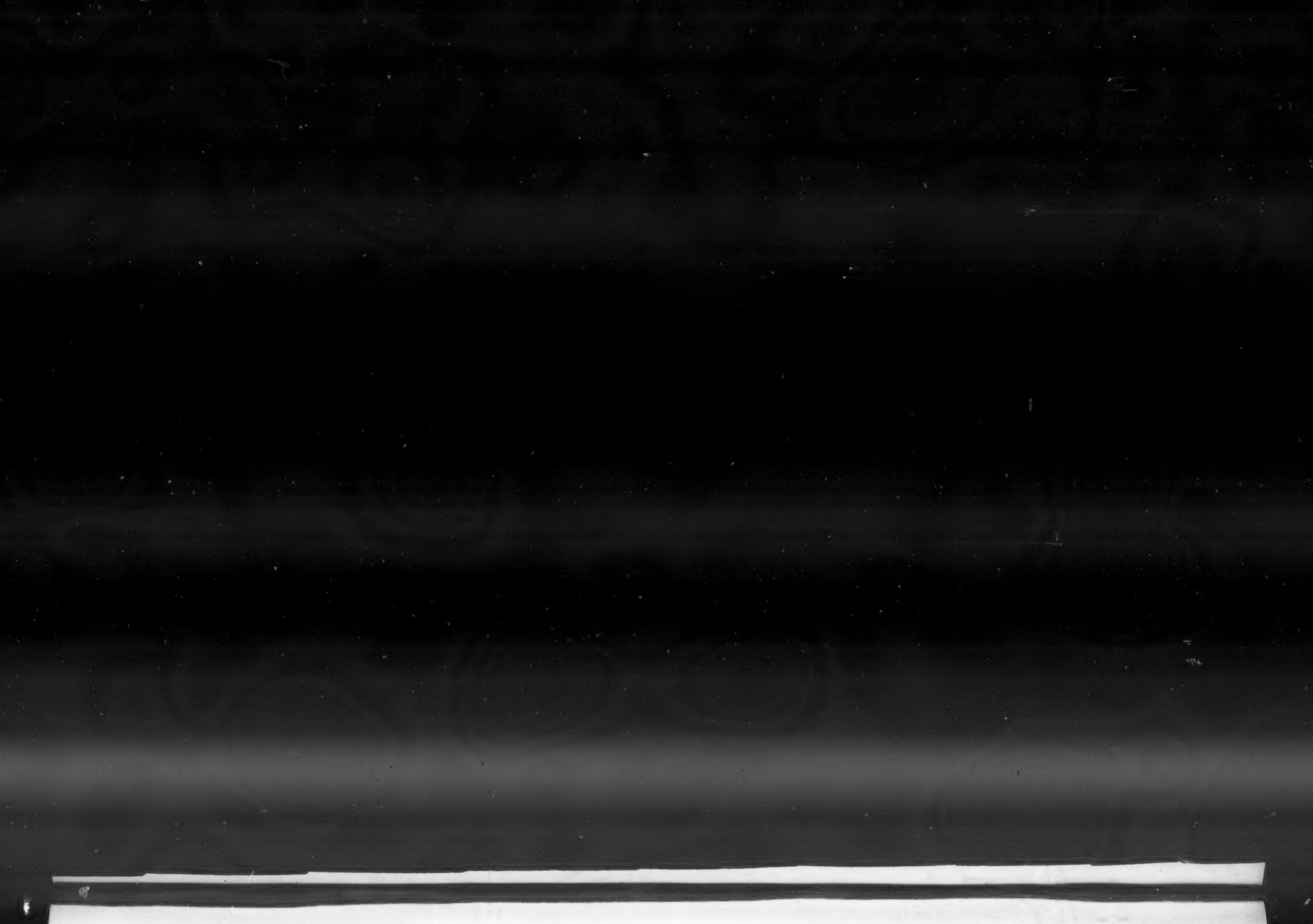
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